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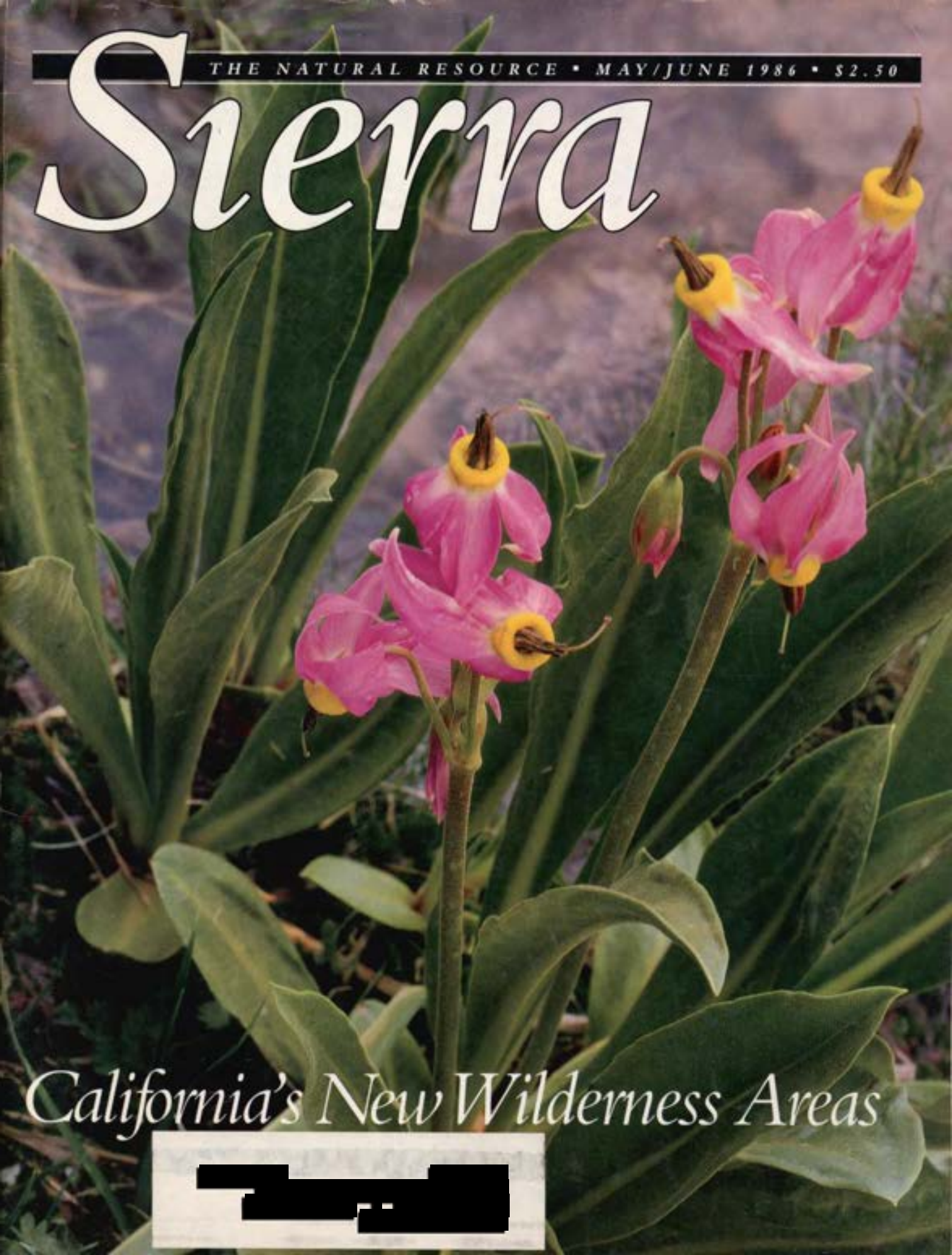

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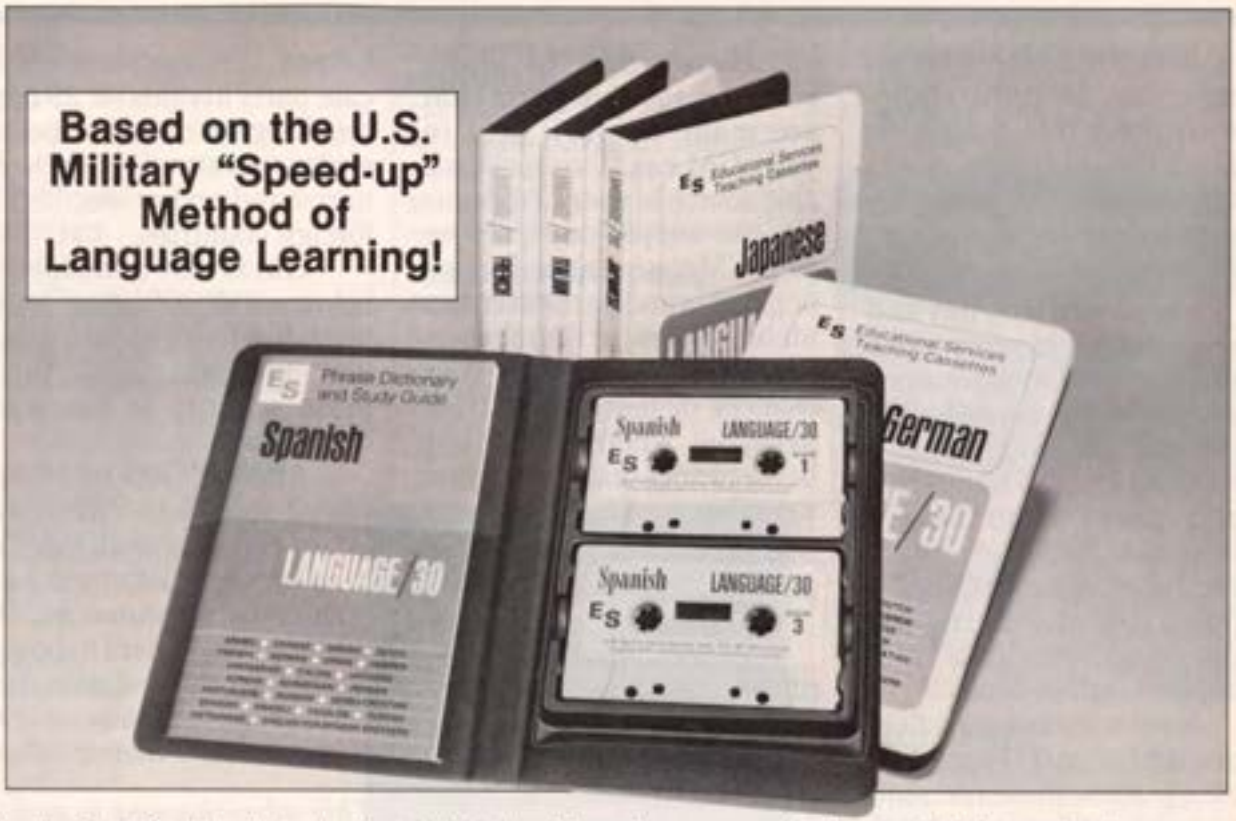

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The failure can be safety-related. A fatal 1985 bus accident in Britain was attributed to the installation of counterfeit brake parts. Ill-fitting counterfeit gas caps can fall off, increasing the risk of a fire in a roll-over accident.

Here's how to make sure you receive parts that are made to work best in your GM car. Your most reliable source is your GM dealer. He can supply any part for your GM car or truck. Buying popular brand parts from reputable stores or garages is another way to improve your chances of getting the right part. But wherever you buy, be suspicious of discounts that seem too good to be true.

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"Look-alike" graphics or a change in the spelling of a recognized trade name. In this way counterfeiters can avoid prosecution under the 1984 Trademark Counterfeiting Law. So examine the package carefully.

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VOL. 71/NO. 3 MAY/JUNE 1986

Sierra

Cover: Several dodecatheon species—like these shooting stars photographed in Humphreys Basin—grow in Sierra Nevada wilderness areas. Tim Palmer hiked through many of California's new (and old) protected areas last summer; for his reflections, turn to page 45.
Photo by Joseph Holmes.

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LETTERS

WALKING HITS THE MARK

It was with much pleasure that I read Jonathan F. King's article "Walking Hits Its Stride" (March/April 1986). As a family physician and a strong advocate of preventive medicine and wellness, I found the article to be a well-written statement of the virtues of walking. King's style allowed for easy reading while incorporating the many benefits of this basic, safe, and inexpensive activity. Well done!

Jeffrey D. Millman, Medical Director
University of Nevada School of Medicine
Reno, Nev.

What a wonderful article on walking, especially the lighthearted photos.

It's too bad you didn't point out that walking barefoot eliminates the wet feet and fungus problems caused by shoes. It's a shame that the child in the last picture is damaging her lungs with that carefree use of foot powder.

Soaring Bear
Brown's Valley, Calif.

I am both sad and angry after reading your article on the joys of travel by foot. The author sings the praises of a daily walk through neighborhood parks and streets. It obviously never occurred to him that a woman's experience might be different.

Walking a mile to work each morning would be a refreshing, joyful interlude, but for me and many other women it means a barrage of street harassment from men on every block. I stopped walking through my neighborhood park when a woman friend—a jogger—was followed and assaulted there in the middle of the afternoon.

So I have something to say to all the men who read *Sierra*: If walking is a daily joy for you, think about what it means for women to live without that freedom. Then do something about it. Stop street harassment and assault; confront the sexist men around you so the women in your life can share the freedom you enjoy—the simple right to take a walk.

Marty Langelan
Washington, D.C.

I found "Walking Hits Its Stride" very informative and an unusual subject for *Sierra* to cover. I hope to see more articles on topics that relate to us as individuals, such as vegetarianism, detoxifying your body, living an ethical lifestyle as an environmentalist, and nonfaddish, useful exercises.

Meanwhile, thanks for the tips. I am, hereafter, increasing my walking and abandoning my jogging. My sore back also thanks you!

Bill Garfield
Chicago, Ill.

DISCORDANT NOTES

As an amateur pianist married to a composer, I can appreciate Paul Winter's works and good intentions ("Paul Winter's Canyon Consort," March/April 1986). But I find his performance in the Grand Canyon entirely inappropriate, and no less so than someone's radio blaring disco would be in the same place.

Lorna Salzman
Brooklyn Heights, N.Y.

LUST FOR LIFE

"Death Among the Lowlife" (March/April 1986) suggests we be concerned about plants, invertebrates, and cold-blooded vertebrates because they can

help us fight human disease and benefit our domesticated life. I would suggest that we also be concerned simply out of a love for life. One definition of love is caring without expecting anything in return.

Richard Moog
Milwaukie, Ore.

STEAL A TREE, GO TO JAIL

I was somewhat amused to read that to prosecute transplant tree thieves in Colorado ("Roadside Attractions," January/February 1986) one must have photos or witnesses other than an investigator. I just want your thieves to know that if they head for New Jersey, I will be happy to take them to trial with only an investigator as a witness, or a captured truckload of trees with tire tracks leading back to a dozen fresh holes. Sounds like a good case to me.

For the sake of the good citizens of Colorado and their hardworking prosecutors, I hope the author simply got it wrong.

Frank M. McDonough, Director
Environmental Crimes Task Force
Oakhurst, N.J.

Gary Ferguson replies: The requirements for successful prosecution of tree theft in Colorado depend a great deal on what jurisdiction the case is made in. Investigators on the central East Slope (where the vast majority of thefts occur) told me they have yet to complete a successful prosecution without photographs *and* a witness other than the primary investigator. I recently found a Rio Grande National Forest agent, however, who said that he'd had some success with photos alone. But as one agent told me, "The point is that the lack of state transport regulations is making all of us jump through a lot of hoops we shouldn't have to."

LOVE THAT LOOSESTRIFE

In his diatribe against purple loosestrife ("Afield," March/April 1986), Larry Van Goethem quotes Eugene Woehler as saying, "There's no redeeming value to the plant from any standpoint." It is obvious that Mr. Woehler is not familiar with the medicinal value of wayside plants.

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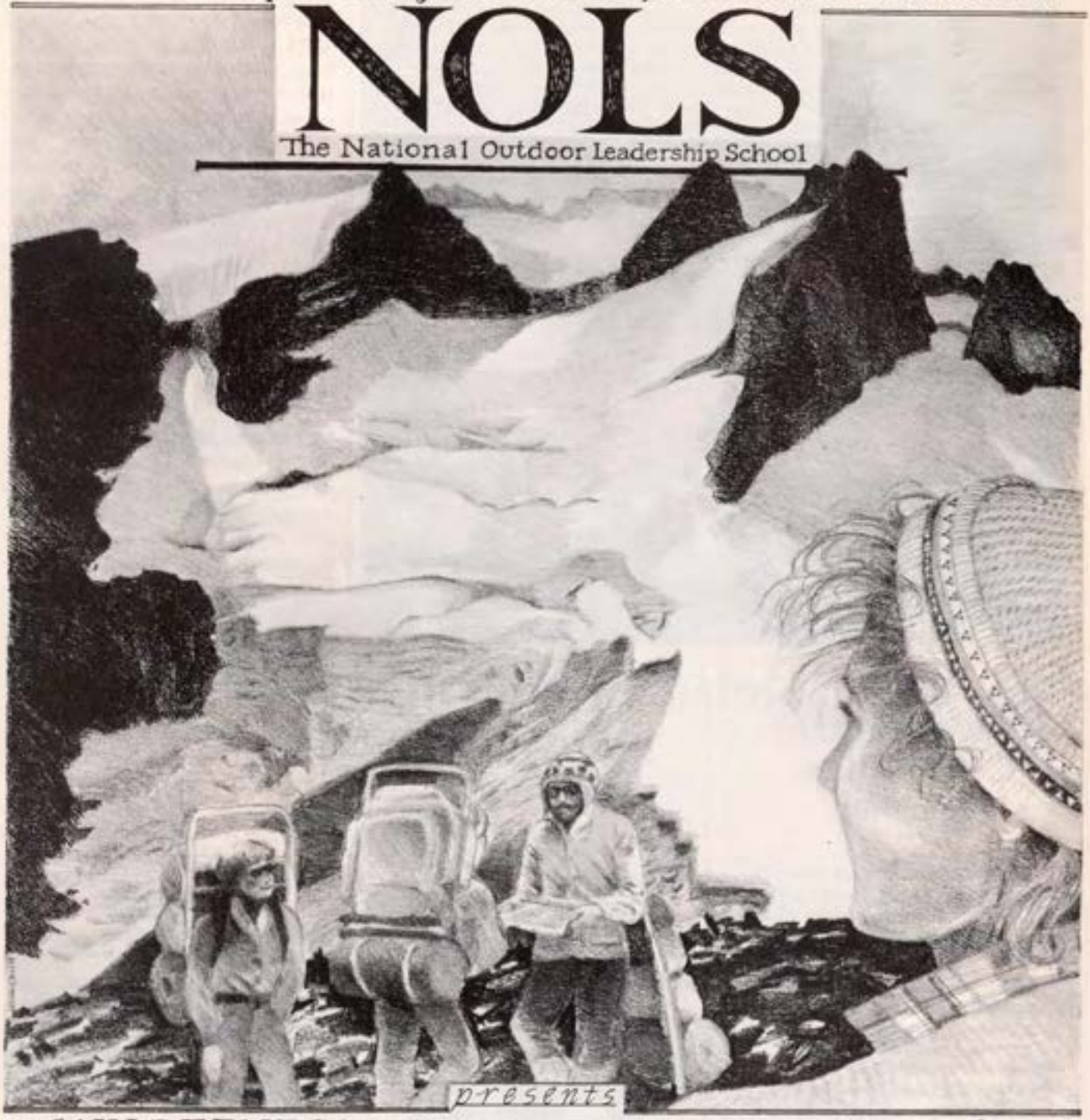

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herbalists, purple loosestrife is *very* valuable. It is an astringent, a styptic, a curative for diarrhea (even the debilitating diarrhea of dysentery and typhoid fever), a treatment for fevers, liver diseases, wounds, sores, and even tired and injured eyes. According to one authority on holistic medicine, purple loosestrife is useful as a treatment for "clearing heat and sedating fire," a condition characterized by—among other things—high blood pressure.

With all these properties, it seems to me that even Sierrans on an outing might appreciate purple loosestrife were they to suffer a bad cut, a wound, or an attack of diarrhea or gastroenteritis.

Dianne M. McCormick
Boswell, Okla.

WHY WORRY ABOUT WATER?

Michael Castleman's review of Jonathan King's *Troubled Water: The Poisoning of America's Drinking Water* (March/April 1986) assures us that a healthy fear of tap water is well advised. Common sense makes one wonder.

The government regulates trihalomethanes (THM), for instance, at a maximum level of 100 parts per billion in drinking water. Chloroform, the main constituent of THM, is said to be a carcinogen; it causes cancer in certain lab animals under certain test conditions. But a regular cup of breakfast coffee contains some 4,000 parts per billion hydrogen peroxide, plus some 4,000 ppb methylglyoxal, both known carcinogens. A 12-ounce can of cola contains about 7,900 ppb formaldehyde. Beer contains nitrosamines as well as formaldehyde. And so on. All are carcinogenic, all far in excess of anything in tap water, and all totally unregulated and unremarked by the Jonathan Kings and Michael Castlemans of the world. How come?

Robert M. Spangler
Littleton, Colo.

Michael Castleman responds: Mr. Spangler raises a good point. There are certainly more hazardous things to drink than tap water. Neither Jonathan King nor I has any interest in frightening people about trivial risks. But the fact is that millions of Americans are already concerned enough about water quality to

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switch to bottled water, and many authorities consider groundwater pollution a significant health hazard—and a major environmental concern. As I pointed out in my review, the real value of King's book is not its scare-mongering, but rather its cogent explanation of this growing problem and suggestions for ways to obtain pure drinking water.

FIRST THINGS FIRST

Mark Vaz's review of *An Environmental Agenda for the Future* (March/April 1986) failed to mention the item placed at the very top of the agenda by the Big Ten environmental groups: nuclear war. "The nuclear winter studies have underscored the catastrophic consequences of nuclear war to all forms of life on earth and have confirmed that nuclear war is the ultimate environmental threat," the report says.

"Conscience requires that action on nuclear issues be elevated to high urgency on the environmental agenda."

Since March 1985, when the United States and the Soviet Union started arms talks, 2,192 nuclear warheads have been produced. Environmentalists' voices must be raised to educate the public to stop this life-destroying insanity.

Nancy Erb
Oakland, Calif.

DON'T COUNT US OUT

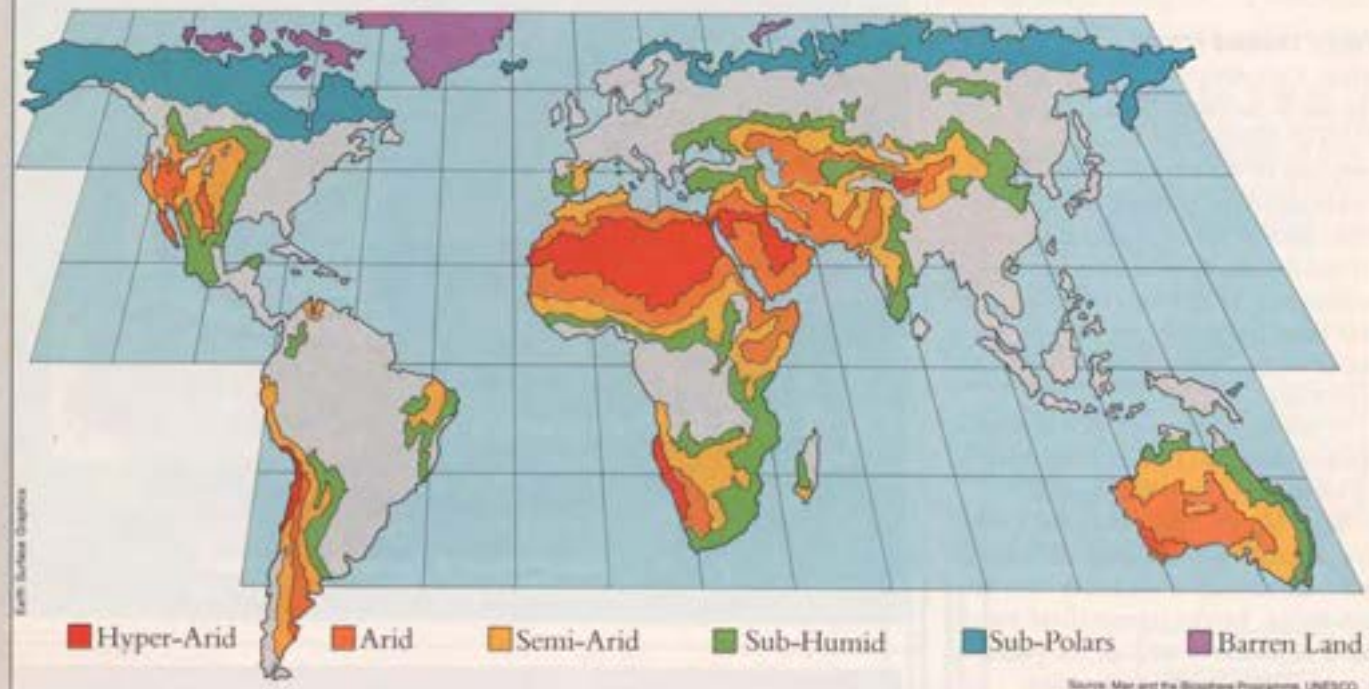
I was at the annual meeting of Save the Bay in Newport when someone pushed a copy of "Conservation Cartography" ("Afield," March/April 1986) into my hands. Kathleen Ferguson's study suggests that environmental activism is "low" in Rhode Island. Nonsense! The environmental movement is probably as strong in the Ocean State as anywhere in the Northeast, but our three largest environmental groups are unaffiliated with those Ferguson studied.

Someone once described Rhode Island as "a brief blur on the road to Cape Cod." That's not fair. Those who take the time to get to know our small state will find some nice surprises. We even have an active Sierra Club group here—part of the New England Chapter—and acres of forest, beach, and marsh to enjoy and defend.

Bob Murphy
Providence, R.I.

LIVING ON THE MARGIN

Marginal lands—those that suffer from low or variable rainfall, cold temperatures, or rugged terrain—support about a third of the world's rural population, who earn a living mainly by grazing livestock. Overgrazing, erosion, and salinization are among the problems affecting marginal lands in 24 of the 31 least-developed countries listed by the United Nations.



Source: Man and the Biosphere Programme, UNESCO

NASTY TICK TRICKS

Doctors were puzzled two years ago when a dozen residents of Northern California's Humboldt County ranging in age from 15 to 45 suddenly contracted what seemed to be rheumatoid arthritis. The physicians began to look beyond their initial diagnoses when they noticed that their patients all suffered similar symptoms—severe joint pain, fever, skin rash, and fatigue.

What they found, after consulting with health authorities on the East Coast, was that Lyme disease, an obscure but potentially serious affliction, had made its way west.

The disease is transmitted by ticks. Specifically, scientists have found that the western black tick (and a similar tick in the East and in Europe) carry the bacteria *Borrelia Burgdorferi spirochete.*

Since 1975, when it was first found afflicting residents of Old Lyme, Conn., Lyme disease has become the country's most common and fastest-growing ailment transmitted by a disease-carrying organism. In 1983 only a handful of people were diagnosed with it; by 1985 the number had soared to 1,500, with victims in at least 21 states. The heaviest outbreaks have been reported in northwestern California, New England, Minnesota, and Wisconsin.

If left untreated, Lyme disease can slowly cripple major joints and cause inflammation of the heart and brain, as well as serious skin disorders. In pregnant women it can be passed on to the fetus, causing birth defects. Lyme disease can be treated with antibiotics.

Researchers say that those most at risk are hikers, campers, and other outdoor enthusiasts. The ticks thrive in moist, well-vegetated areas, and are active during all seasons of the year except winter.

Because the ticks also infest wildlife, eradication is nearly impossible.

If you are bitten by a tick, take note of the date. Early symptoms usually take from three to thirty days to appear, and can include a circular skin rash, headaches, swollen joints, chills, sore throat, muscle pain, and fever. Contact your doctor if these develop. Some hospitals now have a test for Lyme disease.

—Michael Bowker

CHALLENGER'S HIDDEN FALLOUT

If the space shuttle Challenger had exploded during its next launch, originally proposed for May, the results could have been

even more catastrophic.

Karl Grossman, a journalism professor and author of the book *Cover-Up: What You Are Not Supposed to Know About Nuclear Power* (Permanent Press, 1980), says NASA and the Department of Energy (DOE) were planning to use the next Challenger mission to fire a space probe powered by 46.7 pounds of plutonium to explore the atmosphere of Jupiter.

"A pound of plutonium has the theoretical potential to give every person on Earth a lethal dose of lung cancer," says Grossman. "The explosion of a shuttle with plutonium aboard could affect millions of people through the wide dispersion of tiny plutonium particles."

After reading about the Jupiter mission ("Project Galileo") in a DOE newsletter last year, Grossman wrote to NASA and the DOE for analyses of the consequences of shuttle accidents. "They gave me a very hard time, claiming the information was confidential," he says. Grossman subsequently filed a Freedom of Information Act request, and last April the two agencies were ordered to give him the documents he sought.

But it wasn't until last October, with help from Sen. Patrick Moynihan and the Fund for Open Information and Accountability, that he finally received hundreds of pages of information on the consequences of plutonium being vaporized in a shuttle explosion. The pages giving specifics on the number of people that would be affected were whited out, on the grounds that this data could pose a threat to national security.

"The release of this information is mandated by national *in*security," Grossman says. "Here we are, fueling space probes with one of the most toxic substances on Earth. We're just asking for a catastrophe to happen."

NASA has called the risk of releasing plutonium-238 into the environment small, "due to the high reliability inherent in the design of the Space Shuttle."

—Anne Milner

WATER, WATER EVERYWHERE—BUT HOW MUCH DO WE USE?

The Water Education Foundation in Sacramento, Calif., has calculated just how many gallons of water it takes to flush a toilet, water a lawn, or put food on the table. Test your water IQ: If you come close to the answers on page 16, treat yourself to a nice cool glass of H_2O.

A. Taking a bath or shower
B. Washing the dishes
C. Washing clothes
D. Washing the car
E. Brushing your teeth
F. Cooking
G. Flushing the toilet once

To produce one serving of:

H. Corn
I. French fries
J. Wheat bread
K. Rice
L. Margarine
M. Cola soft drink
N. Hamburger

To produce for the typical family:

O. Breakfast
P. Lunch
Q. Dinner
R. A day's meals

SCORECARD

WINS

- Senator Alan Cranston (D-Calif.) introduced the California Desert Protection Act in February to establish Mojave National Park and vastly enlarge Death Valley and Joshua Tree national monuments, while granting them national-park status.
- In January the Interior Board of Land Appeals prohibited off-road vehicles at Panamint Dunes, near Death Valley, Calif.
- On March 18, Senator Robert Stafford (R-Vt.) introduced a new bipartisan bill for stronger acid-rain controls.
- Recreational Equipment, Inc. of Seattle donated $75,000 in March to protect hiking trails.

LOSSES

- Sierra Club lost its suit challenging the Interior Department policy of including submerged lands in Alaska as part of a transfer of federal lands to Native Americans and the state.

DRAWS

- A bipartisan resolution urging a comprehensive nuclear test ban awaits a vote in the House in February, while nuclear testing continues in Nevada in March.

PARK PECCADILLOS

Lafayette Park, a seven-acre plot of land across from the White House that has become a well-known protest site, may soon have its cries of discontent muffled—or at least toned down. The National Park Service, which has jurisdiction over District of Columbia parks, has proposed rules on the size and number of signs displayed in the park.

Originally part of White House grounds under Pierre

L'Enfant's plan for the federal city, Lafayette Park was opened to local residents and visitors by Thomas Jefferson.

In 1983, when the Park Service restricted protest activities on the White House sidewalk for security reasons, protestors moved across the street, taking their signs with them. In recent years Lafayette Park has become home for a number of large, semipermanent signs with messages ranging from the political to the artistic to the bizarre.

Claiming that the signs are a visual blight and a threat to public safety, the Park Service is proposing rules that limit protestors to two signs each, with no sign larger than four feet on a side. Protestors will be required to remain within three feet of their signs at all times, and no structures other than a soapbox speaker's platform will be allowed.

The American Civil Liberties Union insists that the regulations are an unnecessary restriction of First Amendment rights, and has threatened to sue if the rules are adopted. Nearly 150 other groups and individuals have also voiced opinions pro and con.

The *Washington Post* and the Young Republicans have come out strongly in favor of the regulations, while the Sierra Club's Rock Creek Group has opted for a position in the middle: The group feels that some regulations are necessary to protect the park, but opposes portions of the plan as being arbitrary.

The Park Service says the rules will take effect sometime this summer.

—Terry Harris

THE ADS HEARD ROUND THE WORLD

June 9 marks the 20th anniversary of the first of the "Grand Canyon ads," a series of full-page ads run by the Sierra Club that made conservation history.

Generated by former Executive Director David Brower, the five ads ran in national publications and won widespread support for the Club's campaign opposing the construction of two dams that would have flooded the Grand Canyon.

The fondly remembered ad "Should We Also Flood the Sistine Chapel So Tourists Can Get Nearer the Ceiling?" stimulated people to write letters and attend hearings to pressure then–Secretary of the Interior Stewart Udall to withdraw his proposal for the dams.

The ads also prompted the Internal Revenue Service to withdraw the Sierra Club's tax-exempt status.

"Sympathy for the Club exploded nationally," Brower recalls. "People who had never heard of the Sierra Club began asking members how the Club was getting along with the IRS. And people who had always known about the Grand Canyon but who had been quite unaware of any threat to it were now very much aware."

Looking back on the controversy, Udall says, "It was a strong and hard-hitting battle. It prodded me—although I don't get much credit for this—to take a river trip down the Grand Canyon in the summer of 1967; and on that trip I knew that conservationists were right. Those ads shook the rafters, and it was a great victory for the Sierra Club. I withdrew plans for the dam."

Perhaps the most important effect of the ads—in addition to saving the Grand Canyon—was the transformation of the Sierra Club into a grassroots activist organization. According to former Club President Will Siri, the financial consequences of losing tax-exempt status revolutionized the Club by making it dependent on grassroots financial support.

—Michael Cohen

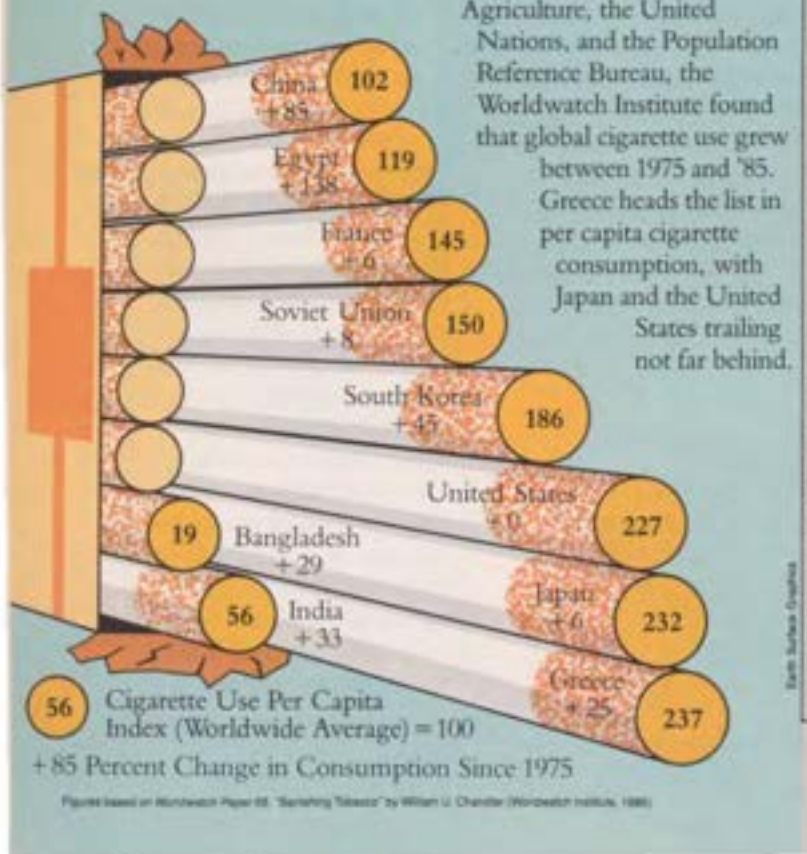
HOT NEW RECIPE FOR EXTINCTION

A growing taste for Cajun cooking, particularly blackened redfish, may be turning the Gulf Coast fish into an endangered species.

According to the Gulf of Mexico Fisheries Council,

TAR WARS

Using information from the U.S. Department of Agriculture, the United Nations, and the Population Reference Bureau, the Worldwatch Institute found that global cigarette use grew between 1975 and '85. Greece heads the list in per capita cigarette consumption, with Japan and the United States trailing not far behind.



Figures based on Worldwatch Paper 68, "Banishing Tobacco" by William U. Chandler (Worldwatch Institute, 1986)

HOW TO HELP A LITTLE GIRL MAKE IT ALL THE WAY TO 7.

It wasn't long ago that if little Kamala Rama drank the water in her village she would have taken her life in her hands.

Today, thanks to Save the Children, she can have clean water to wash with, and fresh water for her mother to cook with.

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And the wonderful feeling of sponsoring a child comes to only 52¢ a day. The cost of a cup of coffee.

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Please, won't you help. Send in the coupon today.

There are still so many children who need the chance Kamala Rama got.

The chance to make it to 7.

Gary Shaye

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commercial landings of redfish more than doubled between 1982 and 1984 (to a record 5.5 million pounds) in response to spiraling demand for the popular entrée.

The dish was named for the way it is cooked. After the filet is dipped in melted butter and highly seasoned, it is seared in a very hot iron skillet. This cooks the fish and forms a thin, blackened crust on the outside.

Cornel Arceneaux, president of the Louisiana chapter of the nonprofit 20,000-member Coastal Conservation Association, is concerned not only about the number of redfish being hauled in, but by the fact that the adult fish that spawn offshore are starting to disappear.

"Local fishermen know that the small, one- to two-pound fish are the tenderest and best for eating," he says, "but commercial fishermen are taking the 12- to 50-pound 'bull reds' by the ton. These are the parent fish, and without them the population could perish." There are no federal regulations governing the netting of redfish, and Arceneaux feels Louisiana's restrictions are not strong enough. The other Gulf Coast states (Texas, Mississippi, Alabama, and Florida) have all passed laws prohibiting the commercial sale and purchase of redfish. As a result, fishermen from other states are coming to Louisiana. "We have enough redfish for Louisiana," Arceneaux says; "we don't have enough to feed the whole country." His group is now pressing for tougher state laws, which will probably be proposed soon.

If a desire to save the species doesn't diminish your appetite for redfish, however, consider this: Nutritionist David Newburg of the University of Kentucky says eating "blackened" food is dangerous. One serving of blackened redfish contains carcinogens equivalent to the smoke of three or four packs of cigarettes. Newburg recommends avoiding blackened foods altogether.

But if your epicurean tendencies get the better of you, and you are tempted by the unbearably fashionable blackened redfish, try ordering plain old red snapper instead: It's cheaper, better for you, and still in the black.

—Anne Milner

WOLF CENTER FINDS A PERMANENT HOME

Ely, Minn., a center for wolf research for the past 50 years, has been chosen as the future home of the new International Wolf Center.

In January a committee of wolf researchers from the U.S. Fish and Wildlife Service and the University of Minnesota chose Ely from a group of four communities.

Eminent wolf researcher L. David Mech proposed the creation of a wolf center 12 years ago. Ely was chosen because it is centered amidst the last viable population of timber wolves (about 1,000 animals) in the continental United States. Three major wolf packs living within ten miles of Ely are part of 13 packs in the area that the Fish and Wildlife Service has been studying for the last decade.

Acting Executive Director Charles Wahlberg reports that current plans for the center, expected to open by 1989, call for a 20,000-square-foot building at a cost of approximately $2 million.

The facility will house the Science Museum of Minnesota's "Wolves and Humans" exhibit, now touring the continent, and will include a wildlife research area, artifact archives, and a live wolf pack for visitors to observe.

The "Wolves and Humans" exhibit has drawn crowds of as many as 4,000 people a day on its tour of St. Paul, Boise, and Yellowstone National Park. After appearing at Boston's Museum of Science this spring, the exhibit will travel to New York, Texas, Wisconsin, Washington, D.C., Florida, Ottawa, and Missouri before going on permanent display in Ely after January 1989. *—Jim dale Vickery*

THE GARDEN GODS MUST BE ANGRY

If the proposals of a controversial report commissioned last year by the town of Colorado Springs, Colo., are carried out, climbing on the red rock towers of the Garden of the Gods could become illegal.

The report, released last December by geologist Robert Hutchinson of the Colorado School of Mines, concludes that during the next 25 to 50 years "the rock formations will be subjected to increasing amounts of physical damage by technical and nontechnical rock climbers." It recommends banning or severely restricting climbing in the park. Climbers have been using the Garden of the Gods since 1916, making it one of the state's best-loved spots for technical rock climbing.

City officials consider Hutchinson's report a legitimate environmental impact assessment, while climbers hasten to point out that in three months of research Hutchinson spent only five days in the park, conducted no surveys, collected rock samples in questionable style (selecting fractured samples lying at the base of the for-

WATER QUIZ ANSWERS

A. 15–30	J. 15
B. 15–60	K. 36
C. 30	L. 92
D. 100	M. 10
E. 1	N. 1,303
F. 10	O. 209
G. 4–7	P. 1,427
H. 61	Q. 2,897
I. 6	R. 4,533

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mations rather than from the rock itself), and presented no data comparing natural weathering to that induced by climbers.

Climbers have undoubtedly left their mark on the Garden. The accepted method of climbing consists of placing nuts into cracks in the rock. At the Garden, permanent bolts are drilled into the rock because there are no cracks. With weathering, the bolts work loose, leaving holes. Chalk and boot marks often occur where boulders pose problems for climbers.

Bill Ruskin of the Colorado Springs Parks and Recreation Department maintains that the chalk marks detract from a visitor's opportunity to appreciate the Garden's natural beauty. "As park managers we can't accept that," he says.

The debate is part of a long-simmering battle over the role of rock climbing in the Garden of the Gods. City ordinances passed in 1978 require climbers to be in roped parties of two or more and to use gear approved by the the Union of International Alpiners. Despite these ordinances, unskilled climbers still risk being injured on the rocks and receiving citations from police officers.

Park manager Ruskin hopes to arrive at a solution by the start of this year's tourist season, but many climbers aren't so optimistic. The city's latest suggestions include a ban on bouldering and using chalk in the main Garden area, and instituting a registration system that would require climbers to carry a specially issued photo identification card.

—Stu Stuller

SINGING THE REAGAN BUDGET BLUES

It probably comes as no surprise that President Reagan's proposed 1987 federal budget would cut eviscerated environmental programs to the bone.

Among the proposed reductions are cuts in the EPA's operating budget, which would take money away from air- and water-quality programs; smaller appropriations from the Land and Water Conservation Fund, a trust established by Congress in 1965 for the acquisition of public lands; and cuts in the Forest Service budget, particularly for land acquisition. The President's budget also proposes raising millions of dollars by increasing fees for recreational use of public lands, while proposing no increase in fees for timber, grazing, and energy and mineral exploration.

In testimony before the House Committee on Budget in February, Sierra Club Executive Director Douglas Wheeler acknowledged the need to raise revenues and cut the federal deficit, but not by "slashing the environmental safety net that protects our priceless natural heritage and the public health." He recommended the following alternatives to the proposed budget:

- *National forest road-building*: Place a one-year moratorium on new road construction.
- *Below-cost timber sales*: Restrict federal spending for forests that habitually run a deficit on timber operations. The President's budget admits that "Forest Service costs for timber and mineral activities exceeded the federal share of receipts by $621 million in 1985."
- *Grazing subsidies*: Reduce subsidization of grazing permits, which encourages overgrazing and results in denuded land, degraded riparian habitat, and reduced wildlife numbers.
- *Energy leasing subsidies*: Replace the noncompetitive lottery system for leasing oil and gas tracts on public land with a competitive bidding system, thereby raising several hundred million dollars in revenue annually.
- *Water project subsidies*: Institute user fees for private interests that benefit from federally subsidized navigation, ports, or irrigation rather than taxing private citizens.
- *Tax subsidies*: Eliminate deduction opportunities from the federal tax code for mining, harvesting, farming, or drilling, which constitute billions of dollars in hidden subsidies that reward resource exploitation.

—Anne Milner

FIELD NOTES

"A true civilization, for me, embraces tolerance as one of its cardinal virtues: tolerance for free speech and differences of opinion among humans, and tolerance for other forms of life . . . bugs and plants and crocodiles and gorillas and coyotes and grizzly bears and eagles, and all of the other voiceless, defenseless things everywhere that are in our charge. Any true civilization must provide for these other life-forms. And the only way to do that is to set aside extensive areas of the earth where humans don't interfere, where humans rarely even set foot."

—Edward Abbey
Interview with ***Mother Earth News***

ENDANGERED SPECIES

Has the Big Cat Come Back?

A spate of unconfirmed sightings has set wildlife biologists on the trail of a creature once considered extinct—the eastern cougar.

John James Audubon's depiction of an eastern cougar in The Quadrupeds of North America.

Joseph Wallace

A SLENDER ANIMAL trailing a long, curving tail bounds across a back road in upstate New York. An unseen creature lets loose a chilling, catlike scream from a Vermont mountain slope. A tawny form is barely glimpsed as it pursues a panicked deer across a Maine meadow.

These reports and hundreds like them have convinced some biologists that *Felis concolor cougar*, a cougar subspecies long thought extinct, may still roam the country's eastern woodlands.

Despite years of searching, however, scientists have failed to prove that the cougar still exists. Experts such as biologist Rainer Brocke are skeptical—even plain in their disbelief. "While there may be a few transient animals, I'm certain that no viable cougar population exists north of Florida and east of the Mississippi," says Brocke, who has looked for the animals throughout the East. But reports continue to pour in, and the controversy over this beautiful predator shows no sign of diminishing.

The debate should come as no surprise to anyone familiar with the cougar, also known as the puma, panther, or mountain lion. Secretive and wraithlike, it must be one of the New World's most mysterious large animals—and one of its most adaptable. The species once roamed from the Atlantic to the Pacific coasts, from the pine forests of Canada to the humid Amazon jungle and the frigid expanses of Patagonia. The cougar was common in the forests and swamps of eastern North America.

Today cougars still survive across much of their former range; the eastern subspecies, unfortunately, hasn't been as lucky. European settlers arriving in the 17th century cut the forests that were the cougar's home, slaughtered the deer that provided its staple diet, and killed the animal itself on sight. By the turn of the 20th century, as far as anyone knew, the eastern cougar was extinct. Only a tiny remnant population of Florida panthers—a different subspecies mostly confined to the Everglades region—served as a reminder of what had been lost.

Nearly a century later, much of the forest cut by the settlers has grown back, blanketing most of the rural East once again. The deer have returned, bear populations are remarkably high, and moose have begun to filter into New York, Vermont, Massachusetts, and New Hampshire for the first time in decades. Has the cougar also returned to this ripening environment?

Biologist Bob Downing, for one, thinks it may have. Until his recent retirement, Downing was a biologist for the U.S Fish and Wildlife Service at Clemson University in South Carolina. He was also in charge of a five-year project searching for cougars in the southern Appalachians, mostly in Georgia and the Carolinas. "During that time I received enough reliable reports to keep me hoping," he says. "But I have to admit that I never found any verifiable evidence."

Downing has no doubt that the majority of sightings can be discounted. "Sometimes people don't know what to look for, or their imaginations run wild," he says. "For example, one man reported that he'd shot and killed a black panther. I went to look at it—and it was a house cat weighing no more than five pounds! Luckily, many of the reports come from people with more experi-

ence and better judgment. I find it hard to believe that all of them are mistaken."

Brocke, an associate professor at the State University of New York–Syracuse's College of Environmental Science and Forestry, is far more pessimistic. If the reports indicated a resident population, he argues, he or Downing would have found at least one unmistakable pawprint, some scat, or other sign. "If you search as exhaustively as Bob has and don't find anything, you should realize you're chasing your own tail."

Downing offers a series of possible explanations for his lack of success. If cougars do still roam in the southern Appalachians, the remaining few are spread over a huge area. Prints can only be sought in snow, and even then they are hard to tell from dog tracks.

Downing gives an encouraging example from Canada. "For 25 years cougar sightings were reported from Manitoba," he says. "For most of that time, no one could confirm their presence. Then a small population of the animals was located—and they appear to belong to the eastern subspecies. Even more exciting, the increase in sightings indicates that the cats may be spreading into Minnesota and Michigan. Remember—we haven't spent anywhere near 25 years looking for the cats here."

The Manitoba discovery focuses attention on the northeastern United States, where Downing believes a similar migration might have occurred. Faced with widespread clearing and hunting in the United States, cougars might have retreated to the relatively undisturbed forests of eastern Canada, and could now be filtering back. Biologist Virginia Fifield of the Massachusetts Eastern Cougar Survey Team is leading the search in New England. In 1981 she established a network encompassing local officers from the Fish and Wildlife Service, Forest Service, and state natural resource departments, and began collecting reports. "I've gathered more than 300," she says. "Many are historical, dating back to 1916, but more than half have come since I started looking."

So far, Fifield has found but a single pawprint that she considers an unmistakable cougar print. "Tracking conditions are very difficult, but there are definitely cougars out there, particularly in the area west of the Connecticut River," she says. "There have also been reliable sightings in Vermont and Maine."

Brocke believes the chances of finding a cougar population in the Northeast are even slimmer than in the Blue Ridge area. "In the wildest areas—such as the Adirondacks—the winters are too severe and the deer population too low to support many cougars. And where there are more deer, you also find more people, and less chance of a cat population."

Though she has not been able to convince Brocke and other skeptics, Fifield maintains that the ongoing search is important. "Although we can't yet prove that the eastern cougar still exists, we have to keep looking," she says. "If even a few survive, we'll have to reevaluate how we use their territory. We've done as much for other endangered animals—doesn't the cougar deserve an equal chance?"

Joseph Wallace lives in New York City. He wrote "Where Have All the Songbirds Gone?" for the March/April 1986 Sierra.

TOXICS

Toxic Chemicals Bond Old Foes

An unusual union between labor and environmentalists has hastened the birth of right-to-know laws across the nation.

Gloria Tierney

Ten years ago, bumperstickers reading "If you're hungry, eat an environmentalist" were common on the cars of construction workers in some parts of the country. Although the bumperstickers have not completely disappeared, many union members are now joining forces with environmentalists to protect the health and safety of workers in mills, factories, laboratories, and building sites across the nation.

Spearheading this effort is the Occu-

pational Safety and Health Administration (OSHA)/Environmental Network, an alliance of labor and environmental groups established in 1981 to stave off President Reagan's burgeoning assault on the environment. The network now has chapters in 30 states. When it was founded, only five states—California, Connecticut, Maine, Michigan, and New York—had enacted workplace right-to-know laws, and none had community versions. Now 42 states and U.S. territories have passed such laws governing the workplace, and 24 have them for communities.

One of the earliest organized right-to-know efforts was developed at the Project on Community Health, a grassroots labor group in Philadelphia promoting occupational health and safety issues in the 1970s. The central notion behind the laws was that people working in a factory using hazardous materials (as well as those living nearby) have a right to know what is being produced at the plant—as long as this information

The states in gray have passed right-to-know laws for workers. The states in dark gray have also passed community right-to-know provisions.

does not hurt the business by revealing trade secrets.

Until the first right-to-know law was passed in 1980, employees were routinely denied information about potentially hazardous materials used in their workplace. Manufacturers were not obliged to reveal what products were being created or used, and even when the names of the substances were divulged, they were often trade names that provided little information about toxicity.

During the Ford administration, trade unions began pushing OSHA to establish a communication standard for hazardous materials. The standard would require industry to protect employees who work with toxic substances, not only by supplying safety glasses and respirators, but also by letting workers know what chemicals they are being exposed to, at what levels these substances become hazardous, and what measures they should take to protect themselves.

"Past experience taught us that industry did not always have its employees' interests at heart," says Bill Kane, co-chair of the New Jersey coalition of the network and a member of the United Auto Workers. "Too often they put profits ahead of health."

At the same time, unions realized that labor "couldn't be parochial and just worry about its own members," according to Kane. "It had a duty to pro-

tect all workers," some of whom worked in industries that had resisted unionization.

And workers were not the only people facing unknown dangers. Living near a factory can sometimes be as hazardous as working in one, since industry is responsible for much of the nation's air and water pollution. Right-to-know efforts were thus extended to the community as a whole, so everyone at risk would have the tools to monitor industry and determine whether hazardous materials were being handled responsibly. According to James Lanard, a lawyer for the New Jersey Environmental Lobby, "After hazardous waste cleanup, right-to-know is the second-most-important issue when it comes to protecting the health of workers and members of the community."

After persistently lobbying two administrations, the OSHA/Environmental Network finally succeeded in getting the Hazard Communication Standard proposed during the last days of the Carter administration—only to see it replaced with a much-watered-down version by Reagan's newly appointed Labor Secretary, Ray Donovan. Howard Samuel, head of the AFL-CIO's Industrial Union Department and co-chair of the network, says it was then that labor—feeling "beleaguered" by the administration's policies—began to "reach out for friends."

Samuel believes that unionized workers and environmentalists are natural allies: "We trade unionists were looking from inside the factory, while the environmentalists were looking from outside the factory—but we were still looking at the same smokestack."

According to Sierra Club national labor liaison Leslie Reid, the turning point came in 1973, when the Club agreed to support the Oil, Chemical and Atomic Workers Union (OCAW) in a boycott against the Shell Oil Company over health and safety issues. Samuel notes that labor's interest in environmental issues predates this by almost 30 years: In 1948, half the town of Donora, Pa., fell ill and 20 people died when weather conditions trapped poisonous gases from the town's steel and zinc factories in the atmosphere.

The establishment of a formal alliance between the two groups almost a decade after the OCAW boycott allowed them to make a concerted effort toward passing much-needed state right-to-know laws. The formation of the network also ensured that members of Congress sympathetic to labor but not always receptive to environmentalists would open their doors.

One of the most successful drives for right-to-know legislation took place in New Jersey. The campaign began with limited funds and strong opposition from industry, but the coalition had legions of volunteers who, in Kane's words, "took to the streets" to garner support for the bill throughout the state. Coached in canvassing techniques by the League of Conservation Voters and other groups, activists rang thousands of doorbells urging people to write their legislators in support of the bill.

Combined with effective lobbying, the canvassing effort turned back opponents who outspent the coalition ten to one. When Gov. Thomas H. Kean signed the right-to-know measure in August 1983, it was described as the toughest adopted by any state, making New Jersey the first to require disclosure to both workers and the public.

Under New Jersey's law, a company could withhold information only if releasing it would reveal trade secrets. But even this loophole had safeguards. Trade-secret claims had to be sent to the state department of health, which would determine their legitimacy.

The chemical industry immediately challenged the law (with the Reagan administration filing an *amicus curiae* brief) and successfully argued that manufacturers could not be expected to meet both OSHA's Hazard Communication Standard and the New Jersey Right to Know Act. Workers' right-to-know was defeated, but the court let stand that portion of the bill requiring the disclosure of information pertaining to the environmental health of a community. Certain pre-emptions to the legislation are still being debated in the courts. Despite the setback, Kane feels the bill represents a success because "we can get whatever information we need to protect ourselves and the community."

In many other states, the same type of two-pronged attack by labor and envi-

ronmentalists has been the force behind the successful passage of right-to-know laws. Texas State Senator Bill Watson, a former OCAW member who drafted his state's right-to-know bill, says it would never have passed without the efforts of the Sierra Club.

With a different industrial pollution problem and political tradition from New Jersey's, Texans took a different approach to passing their right-to-know law. Rather than organize a grassroots campaign, environmentalists and representatives from the Texas Chemical Council hammered out a compromise bill. Howard Saxion of the Sierra Club's Lone Star Chapter admits that efforts by the chemical industry and the Reagan administration to oppose the New Jersey bill persuaded the Texas coalition to seek a less stringent law. Thus, although the Texas law mirrors the OSHA Hazard Communication Standard for workers' right-to-know, the community provisions allow access to information on hazardous substances only to fire-control officials.

Saxion thinks the leak at the Union Carbide plant in Bhopal, India, may

© Mike Yamashita Woodfin Camp & Associates

Right-to-know legislation is designed to give workers in factories and labs or on building sites information about what kinds of hazardous substances they are being exposed to on the job.

have helped pass the Texas bill. The chemical industry "needed some good P.R." at the time, he says, "and the bill provided it."

New Jersey co-chair Kane gives the OSHA/Environmental Network credit for many right-to-know victories: "As a team, labor and environmentalists are hard to beat. Under Reagan, the most conservative president in history, we have passed more health and safety legislation in this country than at any other time."

The AFL-CIO's Samuel is also enthusiastic: "While environmentalists and union members do not agree on every issue, what is more important is our dedication to a common conviction that human lives and health have an importance greater than dollars and profits."

GLORIA TIERNEY *is a freelance journalist living in San Diego.*

RECREATION

Rush Hour in the National Forests

Although used by more hikers than ever, the national forest trail system has shrunk by one fourth over the last 50 years.

Tom Turner

FIFTY YEARS AGO our national forests had 132,000 miles of trails. Today a significantly larger system has 25 percent fewer trails—just 98,500 miles. Meanwhile, trail use has been steadily increasing. In 1980 each mile of trail was used six times more heavily than in 1960.

Of course, 50 years ago there was only a fraction of the current number of backpackers and other wilderness users. National forest trails, many of which had been built long before the Forest Service was established, were used mainly for practical rather than recreational purposes by prospectors and herders. When the Forest Service took over management of these lands, it built more trails for fire control and timber access. But horses and mules eventually gave way to jeeps and pickups, and in 1955 the agency officially de-emphasized its trails because they were no longer considered modern management tools.

The picture had changed by 1973. The backpacking boom already well under way led to a greater demand for trails. The chief of the Forest Service ordered an inventory of existing trails, but the effort was not taken seriously, and some of these audits have yet to be completed. In its zeal to provide the country with cheap timber, the Forest Service has systematically neglected its recreational obligations.

What accounts for the loss of nearly a fourth of the nation's forest trails during the past half century? Some are simply abandoned. "We think of them as blending back into the landscape, a proposition we might welcome in some cases," says Tim Mahoney, the Sierra Club's forest lobbyist in Washington, D.C.

Many more trails are lost because they are buried under new roads and logging

sites. As Northwest photographer Ira Spring says, "Any road that goes into a beautiful valley probably takes out a trail or two." Road mileage in the national forests has increased more than sixfold over the last half century, to a total of 350,000 miles. Most new roads are built for logging, and many of them deface wooded hillsides, choke streams, scar meadows, and damage precious wildlife habitat as well as bury trails. Over the next ten years the Forest Service plans to build 40,000 more miles of roads, a length equivalent to another interstate highway system.

The third trail-eater is a more recent phenomenon: Some trails are straightened and smoothed to accommodate motorized trail bikes. Hikers seeking quiet and solitude are often driven off these trails altogether. Washington state now provides approximately $3 million annually for off-road-vehicle recreation —about the same amount of money the Reagan administration wants to spend on forest trails nationwide.

"But can't you hike on a road?" one might reasonably ask. Yes, you can, just as you can hike 20 miles in Manhattan if you like. But what hikers and backpackers want, for the most part, is a trail that intrudes on the wilderness experience as little as possible.

To protect and expand the nation's trail system, the Sierra Club has joined forces with The Wilderness Society, the National Audubon Society, the American Hiking Society, and other conservation groups to form the National Trails Coalition. Funded largely by a grant from Seattle-based Recreational Equipment, Inc., the coalition has produced several useful studies on the national forest trails system, and is working to cut the Forest Service off at the pockets. Last fall it succeeded in trimming the agency's road-building budget by around $7 million. This year it will try to cut $67 million from the $178 million earmarked for road-building.

The Gramm-Rudman-Hollings Act is seen as an ally in this effort. "The road-building budget is as sacred as the Defense Department budget," says the Club's Mahoney. "As other forest programs are slashed, the proportion of money devoted to road-building keeps increasing. When you're working with the Forest Service budget, Gramm-Rudman can only help."

As Congress continues to debate next year's national budget, the coalition offers the following suggestions:

- Recreation and trails should be funded in proportion to their use.
- The trail system should be restored to a size adequate to meet recreational needs.
- Congress should place a one-year moratorium on national forest road-building.
- The Forest Service should discuss the status of trails in its forest plans, a practice many supervisors have abandoned in recent years.
- The Forest Service should provide assistance and supervision to volunteer trail-builders.
- The agency should minimize conflicts between hikers, horseback riders, and off-road-vehicle users by separating these groups and increasing backcountry patrols.

The coalition has produced a handbook, "Protecting Trails Through the Forest Planning Process" (available for

$1 from Sierra Club Information Services, 730 Polk St., San Francisco, CA 94109), that suggests ways for citizens to ensure that trails get a fair shake in the plans currently being drawn up for the national forests. It urges trail users to keep a close eye on the planning process, and to work on forcing the Forest Service to stop wrecking trails.

"The national forests contain most of the hiking trails in the United States, but for the last 40 years the Forest Service has allowed that trail system to get smaller and smaller," the booklet states. "We are determined to see that the Forest Service lives up to the highest standards in their planning for the public trail system."

A hiker explores Hells Canyon on a U.S. Forest Service trail. Such paths are growing increasingly scarce and congested.

In the Northwest, photographer Spring and several friends are taking a different tack. Using the Jewel Basin Hiking Area (established in Montana's Flathead National Forest about 15 years ago) as a model, the new Washington trails coalition has proposed six different hiking areas in the state's national forests where logging, mining, and motorized vehicles will be forbidden. "Environmentalists have always been great on this matter," Spring says. "We're trying to get other hikers in on the act."

Tom Turner, the former editor of Not Man Apart, *is the staff writer for the Sierra Club Legal Defense Fund.*

PUBLIC LANDS

The Politics of Predator Control

After 47 years in Interior, the job of protecting livestock on public lands is back in the Agriculture Department.

Glen Martin

Will a seemingly minor transfer of authority from one federal agency to another result in significant changes in the nation's predator-control policy? The livestock groups that pushed to get the animal-damage control program out of the Department of the Interior hope so. But it remains to be seen whether the Department of Agriculture will be able to provide what they want—more aggressive efforts to control coyotes and other predators on the public lands.

The U.S. Department of Agriculture (USDA) originally had the predator-control job, but in 1939 Franklin Roosevelt transferred it to the Department of the Interior. Western ranchers with grazing permits on public lands were irate; the USDA was generally considered more aggressive than the Interior Department in coyote and cougar control.

Livestock operators have been agitating for the return of the nation's predator-control program to the USDA ever

since. Their lobbying efforts have been repeatedly stymied by a coalition of environmental groups who feel that giving the USDA this authority is like letting W. C. Fields run a child-care center.

But a recent effort by Idaho Republican Senators James A. McClure and Steven D. Symms outflanked the environmental camp. The senators included the transfer of the program in three pieces of legislation passed in the 1985 session: the farm bill, the Agriculture Department's appropriations bill, and the omnibus spending bill. Conservationists managed to strip the transfer from the farm and appropriations bills in an 11th hour lobbying blitz, but the language remained intact in the spending bill.

Representative John Seiberling (D-Ohio) was particularly incensed by the move, which put legislators in the awkward position of having to vote against all federal funding or accept the shift in power over animal-damage control. "If the cowboys were so sure of the merits, why didn't they go through the usual legislative process of introducing a bill, holding hearings, and so forth?" asks Seiberling aide Russ Shay.

Three hundred seventy animal-control specialists will now be transferred from the Interior Department to the USDA. Most of the specialists are sanguine about the change, anticipating a stronger hand in formulating predator-control policy.

"Since the mandate of the USDA is the protection and encouragement of U.S. agriculture, that department is likely to take a sympathetic view of the rancher's position on predator control," says Ronald A. Thompson, USDA California state supervisor of animal-damage control. "Interior naturally has a different perspective. Their emphasis is likely to be on wildlife rather than livestock. But it must also be remembered that the laws will remain the same, and that field personnel will be working under the letter of those laws. We're not going to go out there and strew poisoned carcasses across the range."

Dr. Terry Salmon, a specialist in wildlife damage at the University of California–Davis, agrees with Thompson: "The shift to Agriculture may mean a more active animal-damage control

program, but the tools haven't changed. The U.S. Fish and Wildlife Service [which administered the program under the Interior Department] will still be consulted regularly. I think that the transfer will provide for a more healthy dynamic between the two departments. Agriculture hasn't really been addressed fairly in the past, and I feel this transfer makes the situation more equitable."

Not everyone shares Salmon's optimistic view. Rose Strickland, chair of the grazing subcommittee of the Sierra Club's national committee on public lands, says, "Agriculture and Interior have always been mutually antagonistic. It's naive to think they can work together effectively toward any common goal. Whether or not the transfer makes sense theoretically, it certainly won't work in practice."

Strickland questions the necessity for *any* predator-control program at the national level. "Low grazing fees on BLM and Forest Service grazing allotments amount to subsidies for a very small number of ranchers," she says. "A federal predator-control program is adding insult to injury. Not only are we sacrificing soil and water to overgrazing, but we're asked to sacrifice our wildlife as well."

Many conservationists fear that the transfer will bring about an increase in the use of poison to kill predators on federal lands. During the past year, federal courts have cleared the way for experimental use of Compound 1080 "toxic collars," plastic or fabric strips fitted with pockets that contain the poison in solution. The collars are placed

This mutton bait, laced with lithium chloride, is designed to convince coyotes that sheep leave a bad taste in the mouth.

around the necks of a number of sheep in a threatened flock; since coyotes kill by crushing the larynx of their prey, they come into contact with the poison by puncturing the collar pockets with their teeth.

Compound 1080 is most toxic to canines, such as foxes, coyotes, and wolves. Given in the proper dosage, it is supposed to be lethal only to these species. It wiped out large numbers of nontarget species during the 1960s, how-

A sheep dressed to kill coyotes. Its collar is filled with Compound 1080, a poison now approved for use on public lands.

ever, when liberal doses were applied to animal carcasses on the open range. These notorious "bait stations" were banned in the early 1970s. Since then, use of Compound 1080 has been illegal on federal lands—until the recent decision to allow toxic collars. Many livestock operators and predator-control specialists also want to see the substance approved for use in baits.

"Compound 1080 received a lot of unwarranted bad press," says animal-damage control supervisor Thompson. "It is highly species specific, and its use in toxic collars and single-dose baits is a responsible way of dealing with coyote depredation."

Others disagree. "It's a virulent poison that has no place on the range," says Strickland. "It will be easy to drain the 1080 from collars to inject carcasses. Since bait stations are a much more effective way of killing coyotes than toxic collars, I feel abuses are inevitable. The compound may be highly toxic to canines in particular, but it will kill any predator that ingests it in sufficient amounts."

Dick Randall, the Great Basin representative for the Defenders of Wildlife and a former animal-damage control agent, also disapproves of 1080. "The whole emphasis of the animal-damage control program has been skewed toward predicides," he says, "and I'm sure that emphasis will continue at Agriculture—or become even more pronounced. There are a lot of alternatives—the use of guard dogs, electric fencing, and aversive agents such as lithium chloride—but the people in animal-damage control have a rigid view that doesn't allow for anything but poisoning, aerial hunting, and trapping."

Randall feels agents should spend their time teaching stockmen nonlethal methods of control aimed at protecting livestock rather than killing predators. "We have to get away from the body-count mentality," he says. "The current direction of the animal-damage control people is accomplishing nothing. We keep making the same old mistakes, and the range as a whole is suffering because of them." ■

Glen Martin is a former stockman whose work has appeared in Audubon, Outside, California, *and* Gourmet.

CLEAN WATER

Through a campaign of fear and intimidation, Interior Department officials are attempting to silence employees concerned about contamination at U.S. wildlife refuges.

Putting a Lid on Kesterson

Michael Bowker

EMPLOYEES OF THE Fish and Wildlife Service (FWS) who are potential witnesses in what one biologist calls "the trial of irrigated agriculture for its environmental insults" are charging top Interior Department officials with censorship and intimidation. The "trial" involves revelations of toxic contamination at many of the nation's 430 wildlife refuges.

Biologists and management personnel within Region One of the FWS say the Bureau of Reclamation's policy of providing water to irrigate marginal farmlands is causing the pollution. Region One, which encompasses the Pacific Coast states, Alaska, Hawaii, Idaho, Montana, and Nevada, includes the site of one of the worst wildlife management disasters in the nation's history: the Kesterson Wildlife Refuge in central California. (See "Crisis at Kesterson," March/April 1984.) Not coincidentally, the area also encompasses the Westlands Water District—one of the largest and richest in the nation (586,000 irrigated acres). Westlands purchases its irrigation water from the Bureau of Reclamation's most lucrative effort, the Central Valley Water Project.

Region One employees in Sacramento say the Interior Department's campaign of intimidation began mildly in 1981, soon after President Reagan took office. According to these staffers, it was spurred by criticism of the Central Valley Water Project within the FWS. Things began to turn vicious in 1984 when biologists at the agency's Sacramento office started making connections between the tragedy at Kesterson and high levels of deadly trace elements leached from Central Valley farmlands by intensive irrigation.

In 1978, drainage water from huge tracts of newly irrigated agricultural lands in central California began to flow into the 1,200 acres of ponds that make up the Kesterson Wildlife Refuge. The flow increased sharply in 1980 and '81. By 1982 the refuge's populations of bass, catfish, and carp had been drastically reduced; only mosquito fish survived in measurable numbers, and that species was found to contain tremendously high levels of selenium. A year later, dead and deformed bird embryos were discovered at the refuge. Subsequent investigations by FWS biologists Felix Smith and Henry Ohlendorf determined that agricultural drainage from the Westlands district was to blame. The drainage water was laced with selenium, boron, and possibly other deadly trace elements that had been flushed from the soil by irrigation.

"Any information we gathered that would conflict with the goals of the Bureau's Central Valley Water Project was systematically deleted or changed, and the person who collected the information threatened and stifled," says one FWS biologist, who asked not to be identified. Biologists also say reports from Sacramento are being edited by staff attorneys from the Regional Solicitor's Office (a legal arm of the Interior Department), who blue-pencil any facts they consider to be politically sensitive.

Assistant Interior Secretary Bill Horn denies the allegations of intimidation and doctoring of reports. "We have an open-door policy in the department, and there have been no scare tactics that I know of," he says. "I spent several days with the field station people in Region

One last fall and didn't hear anything about it. I have heard the accusations about the Solicitor's Office before, and they are totally false. I think we try to issue our reports fairly unvarnished regardless of their political weight."

Yet many of the nearly two dozen biologists at the Sacramento office of the FWS insist that they have been threatened with firing or undesirable transfers and that they were recently cautioned by the agency's associate director, Hal O'Conner, against writing their representatives, joining or talking to any environmental groups, talking to the press, or retaining membership in professional organizations. "He said he couldn't protect us if we did," says a Sacramento-based biologist who also requested anonymity. "He didn't say from what or whom we'd need protection, but the point was made."

Horn suggests another way to interpret O'Conner's statements. "When field station people come across facts, their first obligation is to report it through the system," he explains. "It is a breach of that person's duty to write his congressman first or talk to the newspaper or an environmental group before we have a chance to solve the problem: That's a hell of a way to run an organization."

At the heart of the censorship controversy is the case of 29-year FWS veteran Felix Smith, who was recently transferred from the Sacramento office to Region One headquarters in Portland, Ore., in apparent retaliation for his whistle-blowing efforts concerning Kesterson. Smith, an environmental inspection specialist, was outspoken in his criticism of the irrigation practices at Westlands and initiated questioning of the Bureau of Reclamation's policy of promoting irrigation of semi-arid soils. Smith's troubles arose after he shared his findings with some reporters from the Fresno and Sacramento *Bee* newspapers.

"The pressure came from selected people in agribusiness, via the Bureau of Reclamation and higher-ups in the [Interior] department," Smith says. "They were angry the Kesterson mess had become public knowledge. They wanted to keep it under wraps, because the more people there were who knew about it, the more questions would be asked." Smith was suspended for releasing the information, but a legal ruling under the Civil Service Reform Act rescinded the suspension.

According to *Sacramento Bee* environmental reporter Tom Harris, "Felix Smith was stepping on some pretty big toes, and he knew it. But every call he made on the selenium problem—that it was evident outside Kesterson and was in fact a nationwide problem—was correct. He turned loose an avalanche of questions and criticisms of the Bureau."

Concern over Smith's findings led Harris and the *Bee* to investigate sus-

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pected widespread selenium contamination in several western states. Using independent laboratories to test water samples, Harris found high levels of selenium at 18 sites, including portions of the San Joaquin Valley Wildlife Refuge complex, the lower Colorado River Valley in Arizona, the Deer Flat National Wildlife Refuge in Idaho, the Bowdoin National Wildlife Refuge in Montana, and the Bosque del Apache Wildlife Refuge in New Mexico.

Meanwhile, Smith has told reporters that he is fighting the transfer to Portland because "they have harassed and intimidated the staff to where everybody has fallen in line, and that is what they would do to me." Underscoring his fears is the action that was taken against Region One Director Richard J. Myshak, who supported the biologists' work at Kesterson and other troubled areas. Myshak also questioned the Bureau of Reclamation's policies of water promotion and sale, but "it was California that killed him," according to one FWS official. In January, Myshak was asked to resign or accept reassignment to the National Park Service in Washington, D.C. He refused the reassignment and lost his job in March.

Region One employees are nervously awaiting the outcome of Smith's case. His plight prompted a letter to the editor of the *Sacramento Bee*—signed by 18 FWS biologists, although their names were not published—that said of Smith's experience, "This is a saga of a public servant who would not prostitute himself or the public resources he was hired to protect to appease the federal bureaucracy. In opposition to gag orders (and threats) from his superiors, he told it like it was. He is now paying the price for bucking the system. If the Fish and Wildlife Service is successful in reprimanding Felix Smith for doing his job, then the consequences for the rest of us in the profession are grave."

In the meantime, official investigations into the alleged Interior Department coverup, including congressional hearings and a report by the federal Office of the Inspector General, have raised more questions than they've answered. Among them are:

- What caused the death of more than 15,000 birds near Kesterson Wildlife Refuge between January and April 1984? While FWS officials told investigators from the Inspector General's Office that it was avian cholera, agency biologists say selenium poisoning was a likely factor. (Selenium poisoning is thought to lower birds' resistance to disease.)
- Was there a coverup? In the spring of 1982 a series of memoranda from the Office of the Solicitor placed a gag order on FWS personnel, prohibiting them from speaking about Kesterson to reporters, legislators, or environmental groups. The gag order, justified by statements Smith allegedly made to California water officials, was not re-

scinded when Smith's statements were later found to have been taken out of context.

- Why are there such discrepancies in test results on selenium levels? The Inspector General's report found that measurements of selenium at Kesterson in 1982 and '83 showed an "unexplained variability in results." The Bureau of Reclamation's tests showed selenium levels markedly lower than had been indicated in tests conducted by the U.S. Geological Survey. The report states that a review of USGS testing procedures found that the Bureau of Reclamation's former laboratory, I-Chem, failed to perform a vital step in the test procedures—the conversion of inorganic selenite to the measurable selenate. The resulting error factor was 98 percent.
- What about contamination at other western wildlife refuges? The Interior Department announced in February that it will test 19 wildlife refuges for selenium and other natural toxic elements. But FWS biologists maintain that, while the study is a positive step, the gag order still exists and the Solicitor's control over their field reports is as imposing as ever.

The problems at Kesterson may be just the tip of the iceberg as far as wildlife-refuge contamination is concerned. In January the Interior Department released its draft preliminary study of contamination found in the nation's 90-million-acre network of wildlife refuges. The report identified at least 84 that have been contaminated by agricultural drainage and military or industrial waste, but said only ten of these were in need of "immediate corrective action." In only one case out of these ten—at Kesterson—were agricultural drainwater and selenium blamed for the contamination. (The other nine on the list are Wheeler Wildlife Refuge in Alabama, Kenai in Alaska, Seal Beach in California, Johnston Atoll near Hawaii, Crab Orchard in Illinois, Great Swamp in New Jersey, Ninigret in Rhode Island, and Eastern Shore and Fisherman Island in Virginia.)

Bill Ressalt, director of wildlife refuge programs for The Wilderness Society, claims that the ten refuges placed on the "critical list" were chosen because congressional funding had already been approved for their cleanup, and because specific governmental agencies had already taken responsibility for their contamination. Ressalt says that in reality the refuges on what he calls the "B list" contain many more toxic chemicals than those on the critical list.

In at least 32 of the 84 refuges named in the January study, selenium, arsenic, boron, or farm pesticides leached out by agricultural drainwater were found to be major factors in the contamination. Ironically, a month after the report was published, more than a quarter million fish suddenly perished in the Carson Sink adjacent to the Stillwater Wildlife

Refuge in Nevada, an area not included on the critical list.

"What is happening in many cases is that irrigation of marginal lands is putting a double whammy on the environment," says Smith. "For example, in California the Central Valley Water Project is affecting the Sacramento–San Joaquin Delta, from which it is syphoning off water, as well as contaminating the drainage area that receives the irrigation runoff. In many cases these drainage areas end up being wildlife refuges, because they are often at the bottom of the system. This is happening in many parts of the country."

After the contamination at Kesterson was disclosed, the FWS instituted a $150,000 hazing program to scare birds away from the refuge. But biologist Ohlendorf reports that the program has not been successful, and that there are as many birds attempting to nest at the refuge this year as last. The *Sacramento Bee* cited the agency's own documents that show that 49 of 124 nests found in 1985 contained either deformed or dying bird embryos, which represents an increase over the level found in 1984. Affected species include ducks, coots, killdeer, blacknecked stilts, and American avocets. Preliminary studies suggest that small mammals may also suffer from contamination.

For embattled Region One director Myshak, the situation at Kesterson is particularly frustrating. "It wouldn't have happened if the Bureau had accepted my proposal a few years ago," he says. "I suggested they give us free water and cheap power for the refuges and state wildlife areas. That would have kept the environmentalists off their backs and provided a clean water source to protect the wildlife." Myshak's suggestion was flatly rejected.

But despite the Interior Department's campaign of pressure and their own precarious situations, both Smith and Myshak are remarkably optimistic that major changes are in the offing. "You guys will do it," Smith says of the press. "[*Bee* reporter] Harris really shook the system with his investigations. There is a growing amount of public concern that we don't know enough about selenium, boron, and other potential contaminants. Lowland farmers and ranchers are beginning to have serious questions about the drop in the value of their land once it is contaminated. Publicly, the huge agribusinesses and the Bureau say they want to maintain business as usual, but privately they are saying there must be some changes."

Myshak agrees: "Little by little they are realizing that wildlife-refuge contamination is a real problem. It's like a balloon full of water—you push it in one spot and it bulges out on another. Solving this one is going to be a long and arduous process." ■

MICHAEL BOWKER *is a writer living in Placerville, Calif. He contributed "Domestic Maneuvers" to the July/August 1985* Sierra.


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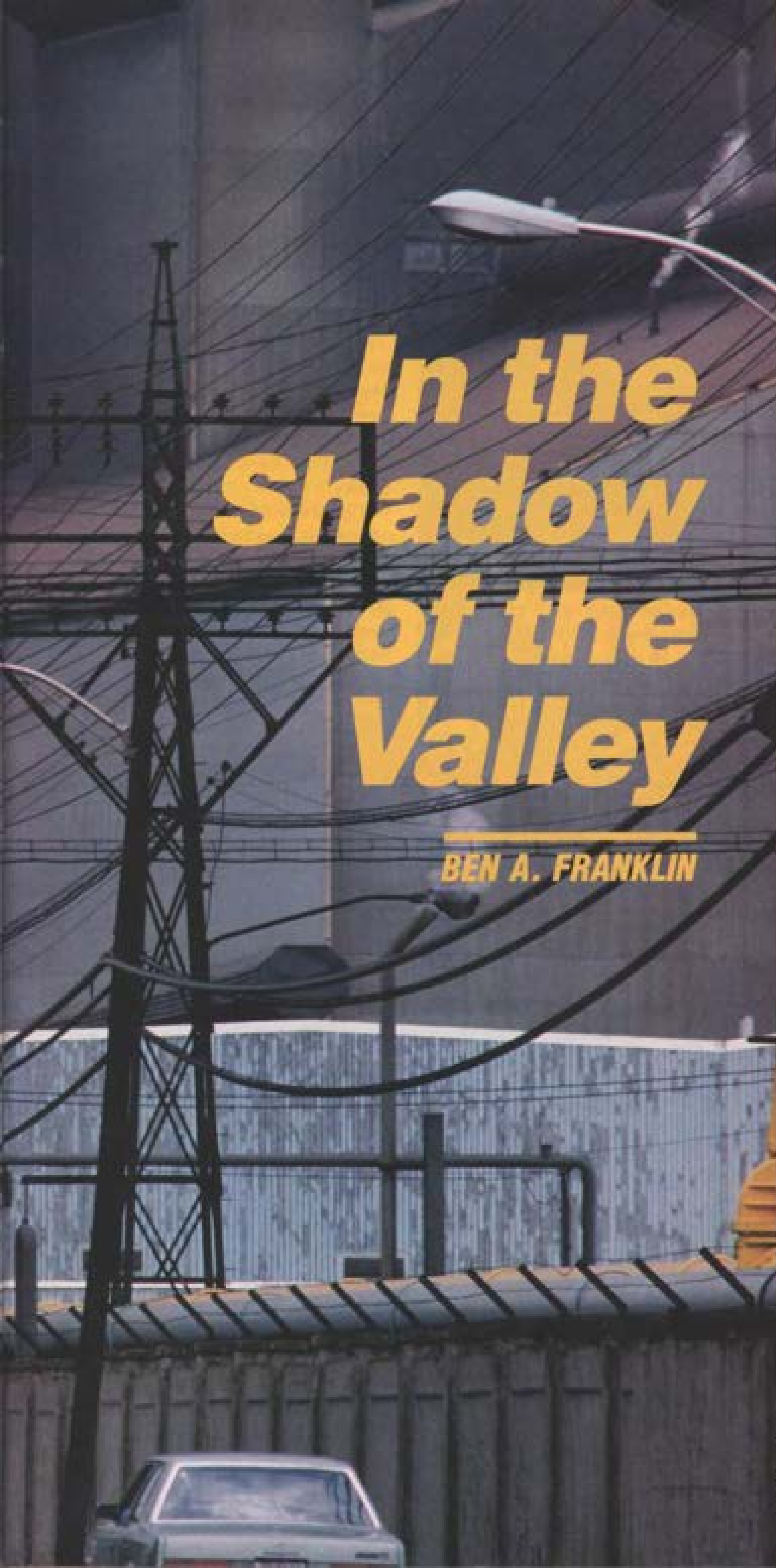

In the Shadow of the Valley

BEN A. FRANKLIN

Shortly after nine o'clock on a Sunday morning last August, a large plume of toxic gas wafted over the West Virginia town of Institute. By the time the powerful, newly installed alarm at the Union Carbide plant sounded almost 15 minutes later, many people had already been alerted to the leak by their own weeping and choking. Others heard no alarm at all.

While this was a particularly serious event (135 people were treated at hospitals, 28 admitted for a day or more), leaks and spills are commonplace in the area that *Life* magazine once called the "magic valley" of the Kanawha River. Dotting the 25-mile-long river valley are some 20 chemical plants that produce explosive, toxic, and carcinogenic compounds that are later transformed into a range of products, including fertilizers, plastics, and automotive antifreeze. In a partial inventory of the chemical industry's most perilous emissions, the West Virginia Department of Health reported in 1981 that these plants released some 7,452 tons of toxic materials into the atmosphere annually. Two years earlier the agency found that cancer deaths in North Charleston, just across the river from Union Carbide's huge South Charleston works, were occurring at nearly twice the expected rate.

Chemical manufacturing shapes much of the daily horizon for residents of the Kanawha River Valley, much as the concrete canyons of Manhattan do for New Yorkers. Muscular loops and arches of silvery, insulation-wrapped pipelines pump millions of gallons of exotic

Life in an industrial community has its trade-offs—but does choosing prosperity over health have to be one of them? In West Virginia, an increasing number of people are beginning to wonder.

Chris Doria / The Charleston Gazette

In a company town (below), the sight and smell of money are always right next door. For most citizens, of course, it's someone else's money—though the sacrifices are more widely shared, as victims of the Union Carbide leak at Institute, W. Va., on August 11, 1985, discovered. The accident could have been worse—no one died this time.

potions back and forth between towering distillation columns and storage tanks. Spaghetti mazes of parallel pipes circumnavigate plant buildings and leap over roadways. Along the ten-mile stretch of riverside chemical plants that border I-64 between Institute and Charleston, eyes can't avoid the languid plumes vaporizing in the sky and the oily flames atop flare towers; often, neither can noses.

Indeed, some people here have come to consider the melange of odors a sign of well-being, the reassuring olfactory equivalent of the turning tipple wheels of coal mines. As one resident put it, "I don't smell chemicals; I smell money."

A good deal of the local chemical lore reflects this kind of jocular denial. Depending on what is leaking, the odors are held to resemble nail polish remover, old kitty litter, garlic, rotten eggs, or burning fish.

Relishing the comic possibilities, valley dwellers speak of chemical spills

after which dogs, "wary of the hot-foot," will not walk on the grass. Then there are the blue cars that turn metallic maroon, and maroon cars that turn iridescent blue. There are legendary spills whose fumes weld scabby blotches on aluminum storm doors overnight, fixing them fast in their jambs; that coat standing water with a pea-green film; and that give damp sheets drying on clotheslines a paisley design, "like a real big bruise."

A story is told in a Charleston saloon about the morning after one particularly intense acid spill, when women arriving for work from the higher elevations stepped down from buses in the valley to find their stockings flopping around their feet, the nylon chemically unzipped at the knee by the acidic aura.

The amputation of St. Anthony's forearm outside the Roman Catholic church at Boomer, upriver to the east, is verifiable. The statue's limb is said to have rotted clean off at the armpit from air pollution; it was found lying on the ground. The priest in charge recently confirmed that a nearby plant (then run by Union Carbide) not only paid to replace the arm but also provided a transparent plastic case for the prostheticized saint. The trouble was that emissions trapped inside the case—the single plant poured out particulate pollutants equivalent to a third of the pollution over the entire city of New York—reacted savagely with sunlight. The statue was consumed.

These tales contain a strong element of act-of-God immutability, as though a little whiff of bromine or chlorine—although perhaps not part of the nightly weather report—were essentially climatological. And in fact, meteorology and geography have a good deal to do with chronic pollution here.

FROM AN AIRPLANE, the Mountain State looks like a rumpled blanket, khaki in winter, green in summer. Only where water has scoured the soil off the steep slopes and deposited it at river bends is there any flat land. Here in the narrow Kanawha Valley, the bottomlands were taken by the early comers, among them the chemical companies. So the Charleston metropolitan area (settled by pioneers in the 1780s) and the sprawling chemical plants that burgeoned during the world wars have been placed at the same riverside elevation, reek by jowl at about 600 feet above sea level.

In a temperature inversion—cold air over warm—the raunchy ambience of spills and leaks tends to hang in the long open tunnel of the Kanawha Valley. When there are fumes, they coil into low-lying residential communities and into the center of the capital.

The local chemical folklore has it that industry executives are immune to their own mischief, and that nothing will ever change because the decisionmakers are above it all. The latter belief has literally been documented. The irreverent *Charleston Gazette* once sent columnist Mary Walton on a drive past the homes of chemical managers with an altimeter in her car. At Charleston the river is 598 feet above sea level. Walton found the homes of Union Carbide managers at 1,275 feet, 1,070 feet, and 1,020 feet; an FMC Corporation manager's at 990 feet; and a DuPont executive's at 965 feet.

The chemical industry began transforming the Kanawha into "the Ruhr Valley of America" during the interruption in German imports that accompanied World War I. In 1918 an entire town at the west end of the chemical strip was thrown together on farmland to manufacture TNT for the Allied war effort. Aptly named Nitro, the town fell on hard days after the armistice, but for a while it claimed to have the largest factory structure in the world.

The confluence of water, coal, brine, natural gas, and rail and river-barge transportation continued to bring to the valley an array of companies that now includes Union Carbide, DuPont, Olin, Monsanto, FMC, and Diamond Shamrock. Although chemical payrolls have shrunk since 1970 and layoffs continue, the industry still employs about 10,000 West Virginians, two thirds of them at Union Carbide's three facilities, at salaries that average more than $600 a week. At 10,500 employees, the state government barely has more.

State figures show that the number of people in the Charleston area potentially exposed to toxic chemicals is between 250,000 and 300,000, and that 300 chemicals, at least 80 of them believed to have injurious health effects, are continuously emitted into the air.

Most of these leaks are not the result of major or even minor accidents. They are everyday burps from leaking pipes, valves, and storage-tank vents. They are what the industry and its regulators have long referred to as "allowable routine emissions." In 1981 (the latest year for which data provided by the industry to the West Virginia Department of Health has been published), these emissions included 132 tons of ethylene oxide, 103 tons of formaldehyde, and 12 tons of acrylonitrile—all known or suspected causes of cancer in humans or animals.

From just one facility—Union Carbide's agricultural chemical plant at Institute—the 1981 emissions included nearly 146 tons of butadiene, 11 tons of ethylene oxide, 50 tons of chloroform,

17 tons of propylene oxide, 10 tons of benzene, and, although it was not reported then, a harmless whiff of methyl isocyanate, or MIC—the lethal stuff of Bhopal.

THE DAY AFTER the massive MIC leak at Union Carbide's plant in Bhopal, India, the chemical industry's long-time strategy of reticence about what it does here began to come apart.

In the same way that the physical and moral agonies of the Vietnam war were thrust into the minds of millions of Americans by television, the idea of one's own violent death by poisoning from a leak at a nearby chemical plant seemed unbelievable until the TV coverage of Bhopal. Day after day during the 1984 Christmas season, images with the West Virginia-like backdrop of stacks, reactors, distillation towers, and storage tanks were beamed by satellite from India. And there were the bodies piled in the streets—dead babies, dead goats, dead cats and dogs. Suddenly, it *could* happen here.

The day following the accident, after reporters' queries to Union Carbide had brought the first general disclosure that MIC was one of the Institute plant's products, the company announced that it was closing the MIC complex to conduct a safety review. Spokesmen acknowledged that Union Carbide had been making MIC at Institute for 17 years, shipping the substance in trucks and railway tank cars to plants that made the finished MIC-based pesticides Sevin and Furadan. It was all accomplished without accident, the spokesmen stressed.

But the smell of prudence, if not of hydrogen sulfide, had reached the decisionmakers in the Kanawha highlands. Quickly and at first quietly a small group of wealthy and influential Charleston business leaders began to construct a defensive strategy. The bottom line was that the chemical industry's retention in the area was absolutely essential, but it would have to be reformed. Confidence would have to be restored. To take the onus off the valley (coexistence with chemical hazards was a national problem, after all) the group decided, rather grandly, to call itself the National Institute of Chemical Studies.

It was not that the founders of NICS felt that they or others here were at risk of choking to death on MIC. Rather, they felt that unless their friends at the major chemical plants did more to improve their public image, the aging and now suddenly precarious chemical manufacturing economy—the base of their own and everyone else's well-being—might be battered by forces beyond local control. They sensed that it was not the unlikely arousal of an inflamed local community that posed a risk to the chemical economy, but rather a phenomenon that has characterized more than one environmental struggle: the power of distant demands for reform. This power had prevailed in the ten-year battle to curb stripmining abuses in Appalachia, a reform enacted in Washington over noisy West Virginian objections that it would cost jobs.

So business leaders were not completely surprised when Rep. Henry Waxman (D-Calif.), who heads the House Subcommittee on Health and the Environment, began circulating internal Union Carbide documents revealing prior corporate concerns about Bhopal. Waxman spoke of the possibility of a congressional investigation before the Institute plant would be allowed to reopen. By this time the EPA had disclosed 28 minor leaks of MIC at Institute during the past five years; company spokesmen belatedly corrected that number to 61 small leaks, adding that none had escaped plant property in significant quantities. Finally, a Harris Poll discovered that a stunning 91 percent of a national sample favored "a federal and state crackdown" on chemical companies.

Meanwhile, local doubts were growing. Two weeks after Union Carbide chairman Warren M. Anderson told a gathering of company employees in Charleston that a leak similar to that at Bhopal was "inconceivable," a leak of mesityl oxide and acetone from Union Carbide's South Charleston plant floored ten shoppers at a nearby mall. There had been no warning, and two days passed before the company knew—or publicly acknowledged—that it was their leak.

WITH A $300,000 infusion of chemical money, NICS is as committed to ballyhooing the benefits of the industry as to descrying the dangers. But although public tut-tutting and admonitory confrontations with the chemical industry are never likely to be part of the group's approach, some assert that the groundwork is being laid here for a new environmental force.

Of course, cynics snort at the idea of a nonadversarial chemical-industry conscience. An environmental Emily Post to coach corporate managers in community manners may yet be co-opted into an elaborate bit of industry public relations, or simply fade away like a puff of methyl ethyl ketone. But already NICS partisans speak of it, almost relig-

iously, as a potential national model.

The group is directed by Lew Crampton, a 46-year-old aristocrat/activist. A well-off former War on Poverty organizer in Boston and one-time Massachusetts Commissioner of Community Affairs, Crampton can probably lay a firmer claim than most to that cherished chimera, a career of public service. Commuting weekends to his home in Washington from the NICS office at the University of Charleston, Crampton has nonetheless established a fairly vivid local presence. He gained combat experience by dwelling among "the gas roots" for a month last year on a street next to an aromatic Union Carbide tank farm. But to reach the NICS objective of peace in the valley will require more than the outreach of "a rich Vista volunteer," as one not-unappreciative cynic calls Crampton.

Some say that progress toward that objective has begun. In a program filed with the West Virginia Air Pollution Control Board, Union Carbide pledged to reduce fugitive emissions from its three plants by a third annually over the next three years. DuPont, Monsanto, and Diamond Shamrock have offered to make similar reductions, though (for the time being) only for one year. These promises, if kept, would reduce routine emissions from 7,000 to 5,100 tons in 1986. There are also promises of reductions in storage of such potent poisons as phosgene and chlorine, and of efforts to develop alternative technologies or change processes to use less dangerous compounds.

One such process was changed at the Institute MIC complex before it reopened last May. The series of chemical batchings that ends with MIC was cut off one step short of the final product, at aldecarb oxime, a less-toxic compound.

The change was fortunate; otherwise what exploded over Institute that Sunday morning in August would have done more than send 135 people to the hospital. In fact, it was solely because of the crucial process change that Institute did not become another Bhopal.

The catalog of human error and equipment failures that led up to that event belied the company's $5-million "safety review." A tank containing 4,000 pounds of aldecarb-oxime mixture was presumed to have been pumped dry, but was not checked. The temperature and pressure monitoring system was out of service, so for 11 days the steam that eventually heated the remaining mixture to explosive pressure accidentally leaked into a jacket around the tank. A pre-start safety review was not conducted. And when the tank ruptured its over-pressure blowout plugs, new safety systems were bypassed or overwhelmed. Engulfed in the control room, six operators had to share two oxygen masks.

Luckily, the chemical cloud consisted of nearly two tons of overcooked, partially decomposed chemical junk that quickly decomposed further. The cloud over Institute contained dozens of end compounds of scalded aldecarb oxime and about 700 pounds of methylene chloride, a solvent commonly used in paint remover.

An initial inspection of the MIC complex by the Occupational Safety and Health Administration (OSHA) resulted in a mere $4,400 fine for Carbide. But last month, after a six-month investigation of the entire Institute plant, OSHA made a stunning accusation: Carbide was guilty of 221 violations of 55 safety and health laws, and it would cost them $1,377,700. Carbide, calling the charges "entirely unjustified," is appealing the proposed sanction.

One of NICS' first projects after the Bhopal incident was to commission a professional public-opinion survey to measure community feelings about the chemical industry. Last November, 806 randomly selected valley residents were contacted by telephone. The detailed 25-minute interviews did much to peel back the veneer of tale-telling.

The findings were gathered by the Public Agenda Foundation, a research group headed by respected pollster Daniel Yankelovich. Based on the results, Yankelovich described Kanawha Valley residents as "despondent," a population "trapped in a psychological dilemma." In 30 years of opinion sampling, he said, he had never seen such disparity between what people felt was vital to them and how much of it they believed they could have.

At the threshold level, the poll showed overwhelming community support for the chemical industry: 93 percent agreed that "the chemicals we make here benefit people all around the world," and 86 percent said that without the industry "the valley would be ruined economically." Yet the poll cited several examples of what Yankelovich calls signs of "latent despair":

- Sixty-one percent of those polled perceived their chemical environment as posing moderate to high risks and as unlikely ever to be cleaned up voluntarily. But a majority also believed that the government strictures necessary to bring about real environmental improvement would drive the chemical industry away, eliminate jobs, and ruin the economy.
- Retrospectively, the chemical industry was given credit by 79 percent for doing "a great deal" in recent years to clean up pollution. But 62 percent said this effort had failed to deliver an environment free of health risks; 48 percent said they still had "great concern" about a major toxic accident, and 44 percent said the chemical companies would not have done as much as they have to reduce pollution if they had not been forced to by the government.
- Sixty-two percent of those questioned felt "good will" toward the chemical industry. But 87 percent expected air and water pollution to be unchanged or worse in the next five years; 90 percent said the chance of a toxic leak will be the same or worse; and 71 percent said that economic conditions and "life in the valley" will be the same or worse.
- Nearly 90 percent said it was "very important" to them to have both a prosperous economy and clean air and water, but only 37 percent thought they had either.
- The poll identified those under 45—more markedly, those between 18 and 30 years of age—as more likely to demand environmental improvement. Fifty-four percent of the respondents 45 and younger would accept a threat to the chemical economy to have a safe environment, a proportion that dropped to 43 percent for those 46 and older.
- Even the hard-liners' insistence on "a prosperous economy" is vulnerable to cataclysmic events. Another accident that sent hundreds to hospitals would

not be enough to change their minds; 75 percent of the strongly pro-industry subgroup would still give the industry's unfettered operation "top priority." But only 40 percent would still give the industry free rein if, for instance, the cancer rate here proved to be higher than the national average in the forthcoming NICS-sponsored health study. And only 21 percent would stand by the industry if a toxic leak caused many deaths.

The polltakers' written report was willing to make a prediction: "Those who name the economy as their top priority will shift their concern dramatically toward the environment if they feel threatened by heightened health or accident risk." Here, the pollsters said, was the potential "had enough" swing vote, identified for the first time.

In an equation that has required—and receives—rationalization on a regional scale, willing trade-offs on workplace hazards have long been made here. In chemicals as in coal mining—another Appalachian industry with a dubious safety record—people would rather go on working at jobs where they make relatively good wages (and that may be the only available work) than fret over the dangers of that work.

When coal or chemical employers come under attack, particularly from outsiders, the reaction is apt to be a defensive, xenophobic community polarization, a rallying-round and display of fierce loyalty to the status quo. Two events that occurred the same weekend last August after the Institute leak illustrate the point. In one, a Union Carbide vice-president was uncharacteristically worked over by an angry audience of several hundred residents; in the other the mayor of neighboring South Charleston led a parade of hundreds carrying placards reading "I Love Carbide" and "Kiss a Carbider Today."

The enduring grit of mountain folk has been a serendipitous natural resource for Appalachian employers. The same venturesome and patriotic West Virginia yeomanry that has lost more men per capita to American wars than any other state has been a major if intangible asset in the conduct of the state's risky businesses. It is tempting to think that this propensity for risk-taking, so convenient for entrepreneurs of chancy undertakings, is what brought the industries here. But Appalachian fatalism could hardly have influenced early mining and chemical engineers to locate in the region: The minerals under the mountains determined that.

WARREN ANDERSON, the 64-year-old chairman of Union Carbide, remains a key player in restoring credibility to the industry. Since accepting "moral responsibility" for Bhopal, however, he has moved somewhat erratically.

Anderson made an appearance at a news conference in the valley last August. With a few citizens still hospitalized after the Institute leak, the chairman made what was intended to be a reassuring announcement.

Under orders he had issued that morning, he said, no Carbide plant would ever again delay sounding the community alarm. Under the stricter corporate policy on alerts, the company would "pull the cord first" and take the heat for "crying wolf" rather than open itself to charges of a self-serving delay. "We make this deal with the community," he said. "Whatever we do, we tell them what we do."

But his statement addressed the treatment of the symptoms rather than the cause of the danger. And in the chairman's mind even these compromises seemed to be circumscribed by some harsh judgments of the regional—really the national—character, judgments that were largely lost in media coverage of the new company policy on alerts.

"It would not bother me to live in Institute," said Anderson, who lives in Greenwich, Conn. "There are people who don't want to live near dumps," he declared; "there are people who don't want to live near nuclear plants. As a matter of fact . . . the United States is getting to be a difficult place to live, because no one wants to take any risks. Somebody has sold a bill of goods that this is a zero-risk world . . . and life is not that way. It can't be that way. And we accept risks in certain areas. We don't try to wipe out the automobile industry because it is a risk."

The sermon ended with a slam at regulators, who Anderson implied meddle in things that ought best be left alone. Looking out over the audience of pencil-pushing journalists, Anderson observed humorlessly, "You know, I think in today's environment you could not invent the pencil. It has a very sharp point. Children use it. You could stick it in your eye, your ear. I doubt that you could get the pencil introduced into the market today, knowing what we know about it."

This was not his last word on the subject. To a *Wall Street Journal* reporter three months later he suggested that many of Union Carbide's residential neighbors at Institute are environmental hypochondriacs. "I think if we had a release of Arpège, 135 of them would go to the hospital," he said.

Perfume it never was. But in Union Carbide chairman Anderson's no-zero-risk world, anything could happen. ■

"LOOK AT THE BRIGHT SIDE — THERE ISN'T A MOSQUITO IN A FIVE-STATE AREA."

BEN A. FRANKLIN, *now with the Washington bureau of* The New York Times, *was for 18 years the paper's correspondent in Appalachia.*

COVER

TIM PALMER

A MONTH IN THE MOUNTAINS

Walking Through California's Newest Wilderness Areas

AT A CLIFF that falls away in front of volcanic peaks, I stop. I've come one mile from Ebbetts Pass and Highway 4, and have only 399 miles to go. There is something to look back on already, but mainly I think about the jumble of forest, rock, and snow that lies southward. Mount Whitney is remarkably distant, and getting there seems impossible. But the Pacific Crest Trail winds like a thread up the canyons and over the passes between the summits. If I hike ten miles a day, I'll climb to Whitney in five weeks. Counting day hikes, I will walk 400 miles. From San Francisco to Los Angeles on the interstate the distance is the same, but the

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In the Ansel Adams Wilderness, Banner Peak looms over Thousand Island Lake's outlet stream.

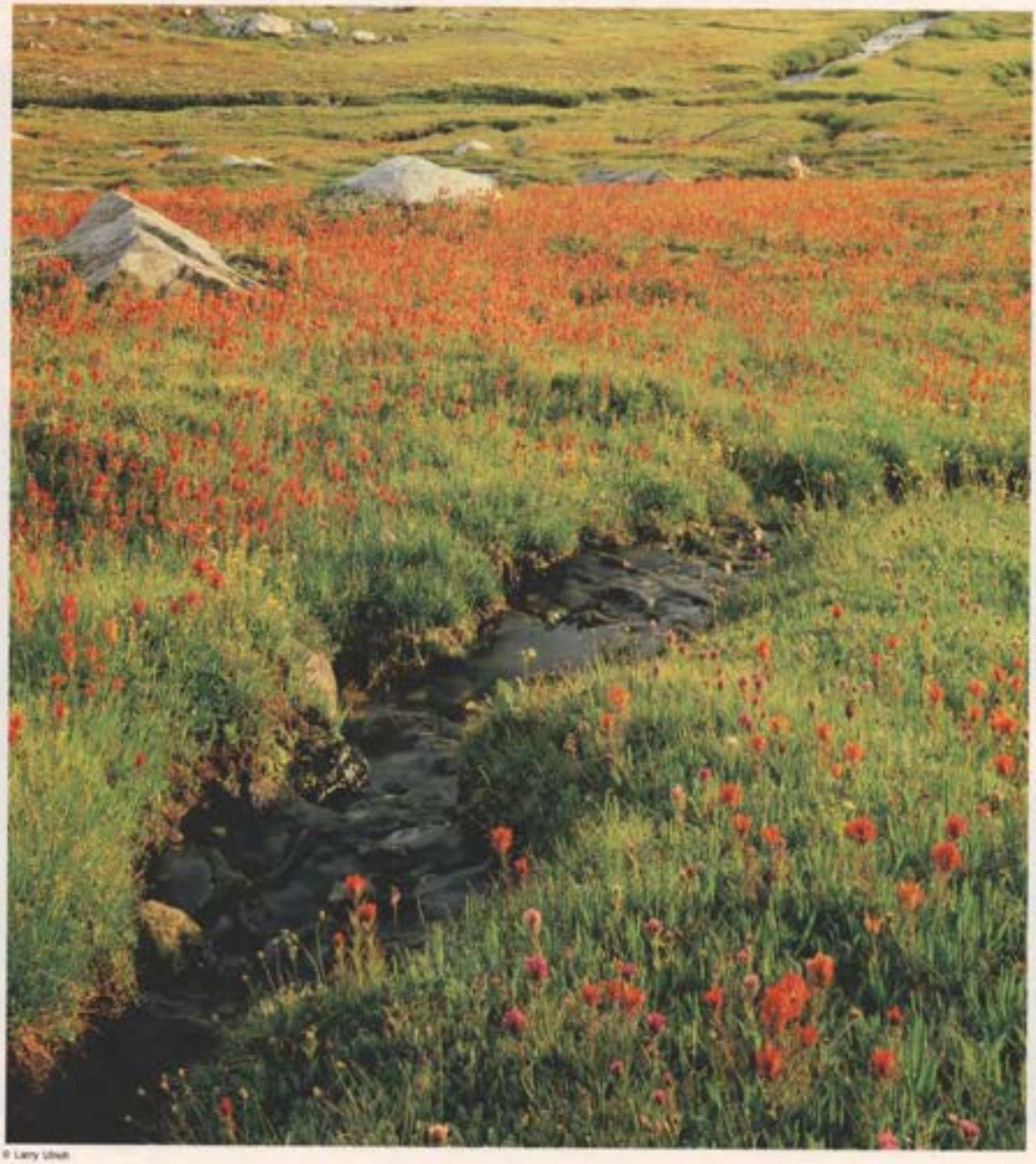
view is not. The view from here is of wilderness.

In 1984 Congress authorized 14 additions to the nine existing wilderness areas in the Sierra Nevada, completing an unbroken 150-mile stretch of wilderness totaling 2.2 million acres, with an adjoining 80 miles of crest cut only by four thin corridors for roads. The California Wilderness Act designated 1.8 million acres on national forest lands throughout the state, plus another 1.4 million in Yosemite, Kings Canyon, and Sequoia national parks. Combined, the Sierra areas that adjoin each other are the longest wilderness in 49 states; outside Alaska, this represents the largest addition to the system since passage of the Wilderness Act in 1964.

I have come to see as much of it as I can. For more than 15 years I've hiked through bits and pieces of wilderness that ended too soon. Maybe this is my chance to finally get enough.

The excitement of the unknown carries me through the first day, but Day Two is different. It hurts. After three uphill grades the score is Palmer 3, gravity 0, though each round has taken its toll. I visualize my problem this way:

Various paintbrush subspecies flourish in Sierra Nevada meadows. This colorful display is near Garnet Lake, off the John Muir Trail.



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Underneath is the ground of the Sierra, deep and hard, rising and forcing me to climb. Above me is my pack, a freight car of stuff. While the ground pushes up, the pack pushes down, and my wobbly muscles strain to keep the two apart.

My load is 70 pounds, but it is not the heaviest. I spot a huge man carrying a huge pack and climbing slowly. It's John Gallagher, who teaches survival at Feather River College in Quincy, at the northern end of the Sierra. "I teach all year, then come out here and survive," he says. He left Tuolumne Meadows with 110 pounds—a month's supply of food, an extraordinary amount. Gallagher will walk to the Feather River, 256 miles, without restocking.

TO MY RIGHT lies the Stanislaus National Forest, to my left the Toiyabe National Forest—but it looks more like the Toiyabe National Pasture. In one three-acre meadow that God meant for a small stream, 30 cows and calves graze. I name it Manure Meadow, representative of many. The stream is filled with hoofprints; plants in the meadow have been trampled or bitten off. Droppings are everywhere except where the stream has washed them away.

I've milked cows and haven't minded shoveling out stalls any more than the next hand. I don't shun the barnyard experience, but I didn't come *here* for one.

The worst thing is not the manure but the ecosystem that cattle bring with them. Undigested seeds are sown by manure-makers with the thoroughness of Johnny Appleseed, and they grow into alien plants. Flies enjoy their favorite sticky habitat, then land on me. I see no deer or bighorn sheep, no marmots or meadow mice—only gophers and cowbirds.

Before the 1930s, brown-headed cowbirds did not live in the Sierra, but they are now common where cows graze and where horses and mules are used. Their arrival has been fatal to mountain birds; at least 22 species are affected. Cowbirds do not build nests but lay eggs in the nests of the smaller vireos, warblers, flycatchers, and other birds. Cowbird chicks compete with and kill the other nestlings. This has left the warbling vireo nearly extinct in the Sierra.

Cows also bring *Giardia lamblia*. These microscopic pathogens infest water and can cause nausea, diarrhea, and cramps so disabling that some victims have to be evacuated by helicopter. Rangers say to boil water for one minute (five minutes at high altitudes), treat it with chlorine or iodine, or filter it. I use a filter that costs $35. It's one more barrier between me and the land, and I don't like it. I drink a lot of raw water in spite of the warnings, but only at high elevations.

Ranchers are quick to point out that deer and marmots also carry *Giardia*, so why pick on cows? I pick on them because this is not their home any more than it is mine. They live most of the year down below, drinking dirty water, then get trucked up here, where they dump their diseases in clean streams. The Forest Service makes much of the fact that people carry *Giardia*: We must relieve ourselves 100 feet from the water and bury our droppings eight inches deep. I agree. I just expect cows to be restricted the same way.

AT CAMP NUMBER THREE, high at the head of White Canyon, I am above the cows. Much of this country between Ebbetts and Sonora passes is part of the Carson-Iceberg Wilderness. At 160,000 acres it is the largest new national forest wilderness in the Sierra. I can see ridge after ridge, summit after summit, all the way to Pyramid Peak in the Desolation Wilderness west of Lake Tahoe, 50 airplane miles north.

On Day Six, at the northern end of Yosemite National Park, I veer right and get lost—which I don't realize until I'm deeply mired in strange topography. The first clue is that the map is all wrong. Then I see that the trail signs are also wrong. Eventually I figure out that I've hiked to a wedge of land between the Emigrant Wilderness and Yosemite, for years omitted from protection because of tungsten deposits and old mines. Nothing profitable remains, so my rocky campsite has been added to the Emigrant.

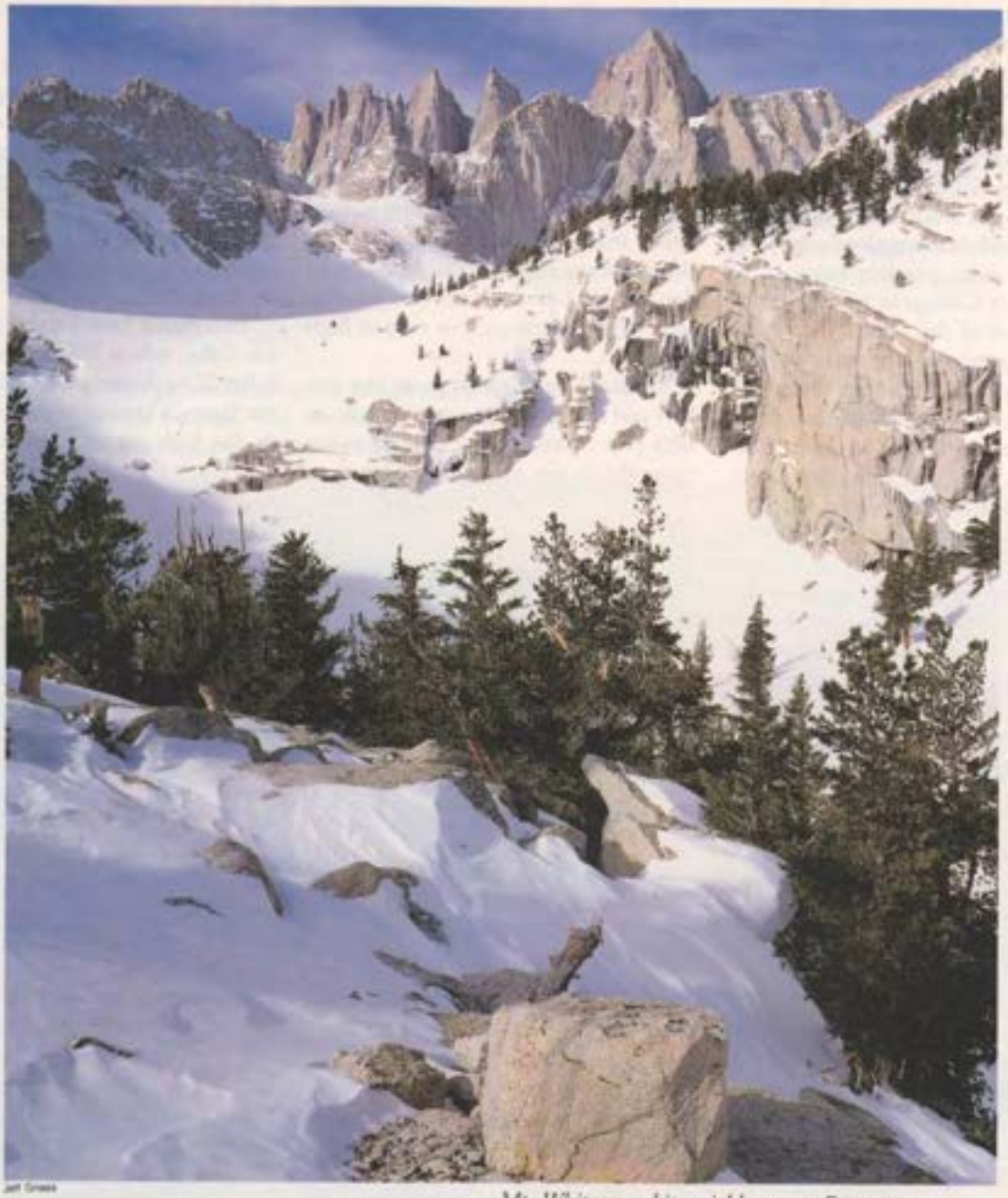
Two nights later I stand beside Benson Lake, which Wilderness Press publisher Tom Winnett calls the Riviera of the Sierra; it has one of the finest beaches in the high mountains. Other people also know this: A cluster of tents decorates every 50 yards of beach. Having people near me for the first time on this trip is strange. My impulse is to hide, but I can't. I fix my dinner and watch people like me. I relax and meet other hikers. At dusk we watch an otter that looks at us before hissing and diving.

Tim Palmer

When Kings Canyon National Park was created in 1940, Congress took care to include the majestic circle of peaks surrounding Evolution Valley.

AT TUOLUMNE MEADOWS, a favorite retreat of many Sierra enthusiasts who find Yosemite Valley too crowded, Highway 120 crosses the range. I pick up my mail there on Day Ten: a box of food I'd sent to myself care of general delivery, and an unexpected letter. My brother-in-law Boyd Murray is flying from Pennsylvania to join me for the first leg of the longest expanse of wilderness on my hike. Boyd is on the plane at this moment.

For two days I loaf in Tuolumne Meadows—in paradise—and join ranger Carl Sharsmith on nature walks. He is 83 and has been charming people into loving the Sierra Nevada since the



Mt. Whitney and its neighbors on a February morning, seen from the Lower Boy Scout Lake Basin in the John Muir Wilderness.

1930s. When Boyd arrives, we begin the idyllic, gentle climb up the Lyell Fork of the Tuolumne.

The question is whether to camp at Ireland Creek or go on, and the consequences could be great. The problem here is bears. Every night I hang my food from a tree, using the "counterbalance" method. But even that may not be good enough. A bear will chew through a three-inch limb for an hour to release food tied to the end. At Ireland Creek, rangers have strung a cable, making it easy for us to hang our food. We decide to stay, but leave our packs open so a bear won't have to rip them to reach inside.

Late at night I wake to the sound of heavy breathing. It isn't Boyd.

I unzip the mosquito net and look out into the black-ball, tiny-eyed face of a bear. I yell "Hey!" I'm lucky: The bear backs off. Why? All I know is that his reaction has nothing to do with pecking order.

IN A STRONG WIND we reach Donahue Pass on Day 14. Boyd points down the Tuolumne canyon and asks, "Where's all this go?" I describe a little of the Tuolumne—its 3,000-foot canyon of

polished granite, its plunge through green woods of cedar, fir, and pine, its temporary death in Hetch Hetchy Reservoir, and then the 18-mile stretch of whitewater that is among the wildest and most challenging in the West for kayakers and rafters. Dams were planned for much of this section until the Tuolumne was designated a national river in the California Wilderness Act. This is considered one of the greatest Wild and Scenic river victories ever, snatched from near loss much like the Snake River in Hells Canyon, the Delaware at the Tocks Island dam site, and the American River in the foothills of the Sierra, where construction began on Auburn Dam but was stopped—though perhaps only for a while.

At Thousand Island Lake we face one of the most striking lake and mountain views Boyd and I have ever seen. At the end of the lake, Banner Peak's glaciers and snowfields are as distinct as if painted by numbers. Headwaters of the San Joaquin's Middle Fork feed the lake and play music across smooth water. Behind Banner is Mt. Ritter, 211 feet higher but invisible from here. The scene is irresistible. I climb up to an *arête* just north of Ritter.

Below me is the cold, blue-black water of Lake Catherine. In front of me at point-blank range are the nearly vertical slopes of Banner and Ritter. Beyond I see granite waves of canyons cut by the North Fork of the San Joaquin; behind me rise the peaks of southeastern Yosemite National Park. To the east is ameba-shaped Mono Lake—one of the oldest lakes in the country, dying because of withdrawals by Los Angeles—and the Mono Craters, the youngest mountains in America.

Although there is a lot to see here, the overpowering, inescapable impression is that of wind: not just wind, but a continental blast unblocked since Mt. Fuji. It roars and blows me off course. It is threatening but thrilling, disabling but energizing. I call the site atmosphere-intensive: The sky extends even below me for thousands of feet, and the wind gives the sky a force I've known only in rivers that have swept me away.

Perfect days are what we have come to expect. Lake Catherine lies glassy on Day 16, and the sun shines golden on Banner. We pass the falls of Shadow Creek, east of the jagged Minarets, truly one of the Sierra's most beautiful spots. All the land from here to Yosemite, 12 airplane miles away, was included in the original park in 1890, but deleted in 1904—supposedly to follow watershed boundaries, though the pared-off property included silver that miners wanted to haul away. In the 1950s the miners proposed a road up Shadow Creek, but they were stopped.

Near Devils Postpile National Monument we hike to the road and hitch a ride to Mammoth Lakes, where Boyd will catch a bus back to San Francisco. I pick up more food at the post office and take the shuttle bus back to the trail by way of Minaret Summit—a landmark of Sierra conservation. For this pass, highway planners in the 1950s proposed the last serious plan for another trans-Sierra road. It would have chopped the longest wilderness in two.

The proposal encountered serious resistance from the Sierra Club and Norman (Ike) Livermore, Gov. Reagan's resources secretary, who had owned pack stations in the Sierra. Although the road was stopped, the corridor was passed over when the Minaret Wilderness Area was designated, and the road remained a threat until 1984, when designation of the Ansel Adams Wilderness closed the gap in protection.

Devils Postpile is a textbook example of basalt columns, and like Minaret Summit it is of key importance in conservation history. The monument was set aside in 1911 to stop miners who wanted to dam the Middle Fork of the San Joaquin River for electricity. This seldom-publicized victory for preservation came during the losing fight to save Hetch Hetchy Valley, and it helped set a precedent for designating federally protected areas to stop environmentally destructive projects.

I reach Silver Pass on Day 20, and up high, before sunset, life is just fine. I have the world to myself.

The sky grows darker, and I realize that I am staying up here for the night. The air is cold, exciting, and sharp. The sun has disappeared but burns an iridescent yellow line, as thin as can be, on the craggy horizon. The wind is in concert pitch. Two hundred feet below me, the pines whistle; 600 feet below, whitecaps lap against the shore of Chief Lake.

Wind roars between rocks to my left; to my right it splits around rocks that cause sheet-ripping sounds during powerful gusts. Somewhere else—on the plains, say—this wind would carry a veil of grit. Up here it sweeps the land invisibly, not a blower of trash, but one of Earth's great media, lifelike. Still, it is a wind that I zip my jacket to, one that I lean into, squint into, one that would in time wrinkle me and wear me down. It wears down rocks. It is too vast to enjoy, too big to love, but it is intoxicating, and I breathe deeply. After dark I am chilled to the bone, and like my only company up here—marmots and mice—I hunt for shelter among the rocks.

The next morning I am exhausted, maybe because the wind woke me up a hundred times. Up here is not where people belong, except for maybe a night or two. Right now it's freezing. My Sierra journey has run through the summer, and last night the season changed. The aspen will turn orange, and the mornings will be slippery with ice. It is September, and it is fall.

On Day 23 I reach Kings Canyon National Park, and even the entrance is sublime. Piute Creek is lucid, with a white and gray bottom like lumpy ice. An ancient juniper forms the foreground. Behind, granite domes and peaks rise a vertical mile.

The trail is heavily traveled here. Forty "Sierra seniors," age 60 and up, walk down the mountain. Their gear is tied onto mules. Later I see a four-month-old baby carried by its mother. At a ford in Evolution Creek I come across a rare sight: two women. They are from Santa Barbara, hiking to Whitney. Five days on the trail, they crave health food: "Just think of it—spinach salad, fruit and yogurt, tofu." I admit to myself that what I crave is fat.

Alexander Gaguine joins me at LeConte Canyon on Day 25, bringing 15 pounds of food for me in addition to his own gear. On our second day together we see thunderheads piling up at Palisades Lake, so we hurry up the thousand-foot climb to Mather Pass. The sky thickens, clouds squeezing out the blue. As we climb, the wind grows, and moisture swirls around the peaks. We

walk fast, push hard for half an hour, breathe deeply, step up, step higher, switch back, stride out on the level, hold our pace on the grade, sweat, pant, and tighten all over for one final burst of energy to the summit. The mind makes the body go, and then the body rewards the mind. I am dazzled and euphoric on the top. The wind blows all around us, but we are lucky: Thunder and lightning never come.

On Day 28 Alexander hikes out to Cedar Grove at the western entrance to Kings Canyon National Park, and everything begins to run together: streams, lakes, peaks, days. I feel sick. Something I drank? I don't sleep well, and my hard bed through the lengthening nights makes me stiff. Something is wrong. Maybe this dry diet is getting to me. Maybe I've been here long enough. I have to remind myself, "See! Really see!" I tell myself, "Look at the Sierra the way you did when you first saw it 16 years ago."

But my mind works too much. I hear songs in my head when all I want to hear is the birds and wind and water.

At Forester Pass, 13,108 feet, I see the Kings-Kern Divide—a jawful of molars, canines, buck teeth, and fangs. Southward lies a different world: the Kern Plateau. Hanging valleys and chaotic ranges appear Alaskan in scale, full of space, and space, and space.

In the distance the Monarch, South Sierra, and Domeland additions are new wilderness areas, but important tracts have been excluded. First among these is Monache Meadows, one of the two largest meadows in the Sierra, which is also the site of a potential hydroelectric dam (according to a study done by the state when Ronald Reagan was governor). Second are the deep forests of Trout Creek, which hold golden trout. Off-road-vehicle riders lobbied with ranchers against wilderness for Monache; loggers won the political battle for Trout Creek. Sierra Club leaders in the southern Sierra hope that these areas may be added, but Congress is not likely to consider any more national forest wilderness in California for a decade.

From up here on the pass the world could be wilderness forever, except for the thick haze to the south. It looks as though the dust and smog of California's Central Valley is blowing up the Kern Canyon from Bakersfield. And beyond my view, on national forest lands, pines are being clearcut on hot, dry soils where the stands may never recover.

Day 31: Whitney lies ahead. I hope to sleep at the pass (14,200 feet), so I can reach the summit at dawn. Already I am two miles up the trail from timberline, but the sky is stormy, and when it begins to hail I abandon my plans to climb higher. I pitch the tent in a small basin and wait for the sky to clear, because it usually does in the evening. But to depend on mountain weather is to ask for trouble.

At midnight I wake up feeling like I'm in a bass drum. The thunder is higher-pitched than normal, and it sounds artificial. When I look outside, the flashes are alarmingly bright, but distant. Through dark clouds, half a moon lights the rocky landscape, but to the west the sky is opaque. The clouds there are black, devouring stars at a rapid clip and cruising bloblike toward me.

Now the thunder doesn't begin with a rumble but with a clap. The peaks of 14,000 feet will draw the lightning, but the granite runs down to where I am, on shallow soil that is already wet and will soon be soaking when the blob arrives. I feel like I'm sitting in water at the end of the wire that grounds these peaks.

I want to get out of here. Am I paranoid? Maybe. People often camp up here. But this looks serious. Heavy drops spit against the tent like buckshot. I wear my rainsuit on top of my warmest clothes. I grab my penlight—as if it will do any good—and take matches.

I burst out of the tent, throw my pack inside, and wonder how I'll find the tent in the dark. I run straight out to the trail and barricade it with my tripod so I'll run into it when I return. Then I flee down the mountain.

It is a typical Sierra Nevada trail, covered with rocks and steep steps. Though I can't see much, my feet somehow know where to go. There are no cliffs to worry about. During lightning flashes, maybe every ten seconds, I adjust my course. Rain and hail sting my face.

Now the black cloud is over me, around me. I am breathing it. I have a strange lightheaded feeling. I count five seconds between lightning and thunder. Then four. The flashes are brilliant, leaving me blinded. Three seconds. I must abandon this rivulet of a trail that could act like a copper wire. Lightning shows a slope of loose rocks to my right where I climb up from the soggy trail, then pile small rocks on large ones to create airspace underneath me. I don't think air will carry the electricity if lightning strikes above me and runs down through the water that now coats the granite like a glazed donut. I crouch on my rockpile and pull my hood up.

One second. The lightning is a thousand feet away. Less than one second. The flashes are spectacular. My world is bright, loud, and wet. I look out into blackness that for a split second turns as bright as a dozen noons. All of it is white—peaks, boulders, millions of rocks—not just white, but blindingly white. After the flashes I see bright red, and before my eyes readjust to blackness, lightning blinds me again. The rain comes hard, easy, hard, easy. The flashes are three seconds away, then five. My neck is wet, my shoulders are getting wet, and my legs ache.

Finally I see the first star. Two hours after abandoning the tent, I return and drop off to sleep.

The next day I wait for good weather, and on Day 33, at 10 a.m., I reach Mt. Whitney. For two hours I look north to see where I've been, west to the backcountry of Sequoia National Park, east to the town of Lone Pine—the shade trees are only a green tint from here—and south to where the Sierra fade away into the coast range and desert.

After 400 miles in the high country, the hike down the east side is my descent to lower earth. Dozens of people struggle upward. Rapidly I am dropping down hundreds of switchbacks, through entire climatic zones. I shed clothes as I go. The trail enters the trees: foxtail pine, lodgepole pine, white fir, and Jeffrey pine, each at home in a lower place. Then, only 100 yards ahead, at a blacktop road at Lone Pine Creek, the smell of the cottonwoods is rich. ■

Tim Palmer's Endangered Rivers and the Conservation Movement *will be published this year by the University of California Press. He is currently at work on a book about the Sierra Nevada.*

THE INTERNATIONAL ACID TEST

MY LOG CABIN looks out over a lake that has grown increasingly clear in recent years, with a strange mat of algae spreading across the bottom. Native trout are now scarce, as are loons, osprey, and otters. Bullfrogs are all but silent. As much as a third of the virgin red spruce around the lake have died.

When I dropped a pH meter in the lake after the snowmelt last spring, it measured a very acidic 3.9. In 1979 it had measured 4.3, and in 1933, according to state records, it was a healthy 6.3. My lake is now at least a hundred times more acidic than it was 53 years ago.

I've noticed these and many other changes in the 20 years I've lived in the Adirondack Mountains of upstate New York, one of the regions hardest hit by acidic deposition. Many of my neighbors have had to replace their copper and lead plumbing as acidic water corroded the pipes. At least 600 lakes and ponds in the western Adirondacks have been acidified to some degree, and the red spruce forests on the higher peaks show extensive damage.

After studying the problems with acid rain in this country, I traveled to Scandinavia and Switzerland in 1980 to take a look at the big picture. This foreign exposure revealed that acid fallout is not just an American or European problem; it afflicts all densely populated, industrialized nations that use fossil fuels to produce energy.

Acid rain is threatening trout high in the Rocky Mountains and sugar maples in Vermont and Ontario. It is dissolving India's Taj Mahal and rendering some European game unfit to eat. According to Earthscan, a London-based news service of the United Nations, more than 16 million acres of forest in nine European countries have been damaged by acid rain. The Acropolis, the Tower of London, and Cologne Cathedral are also victims. As one Danish architect commented, "These buildings are melting away like sugar candy." Even parts of Latin America and Africa are showing signs of damage.

Acidic fallout has probably been present since the Industrial Revolution. Before that, the use of fossil fuels—coal, peat, gas, and oil—was insignificant. But as industrialization began to spread in the mid-1800s, especially in the Northern Hemisphere, so did the burning of fossil fuels for energy. Increasingly greater amounts of sulfur dioxide (SO_2) and nitrogen oxides (NO_x) were being released into the air, along with traces of heavy metals.

These dirty gases and particles can rise to high altitudes, especially if they are emitted from tall smokestacks. Once aloft, they are chemically transformed by sunlight, moisture, and other substances into

JAPAN, CANADA, NORWAY, SWEDEN, AND GERMANY HAVE MOVED DECISIVELY TO CLEAN UP THEIR SKIES. BUT MAJOR EXPORTERS OF ACID RAIN HAVE FAILED TO ACT, LEAVING THE WHOLE WORLD IN JEOPARDY. ■ *Anne LaBastille*

sulfuric and nitric acids, hydrocarbons, and ozone. This polluted soup can be swept along on the wind for thousands of miles. When it falls back to Earth mixed with rain, snow, dust, fog, mist, dew, hail, sleet, rime ice, or hoar frost, it is called acid rain.

ANALYSIS PARALYSIS

The United States

How acid rain does its damage is an intricate puzzle; any solution must look to chemistry, meteorology, geology, biology, botany, soil science, and other disciplines. Some countries, including the United States, use the fact that scientists don't completely understand this process as an excuse to delay cleanup.

Two august scientific bodies, the National Academy of Sciences and the White House Office of Science and Technology Policy, have recommended that immediate action be taken to reduce acidic emissions by strengthening the Clean Air Act and negotiating with Canada and Mexico to reduce transboundary pollution. But the Reagan administration continues to insist on more studies and no action. At Canada's urging, the President endorsed a $5-billion program in March to research cleaner ways to burn coal. The move rated big headlines, as it was the first time the President had admitted that acid rain is a serious international problem worthy of federal money and attention. But the proposal did not include any measures that would guarantee reduction in SO_2 and NO_x emissions.

David Gardiner, Legislative Director of the Sierra Club, describes the move as a smokescreen designed to give the administration an excuse to delay action for another five years. "There is no need for a research program," he says. "We know how to control pollution by using scrubbers and switching fuels. We need an acid rain control program."

The United States' reluctance to cut emissions makes it difficult for President Reagan to ask the Mexican government to put scrubbers on a new, mammoth copper smelter at Nacozari, just 60 miles from the Arizona border. The plant's sulfur pollution is expected to reach sensitive lakes downwind in the Rocky Mountains. (See "King Copper's Acid Reign," March/April 1985.) Yet the United States has refused to extend the courtesy of reducing emissions to Canada—its own downwind neighbor.

FORGING AHEAD

Canada

Despite repeated rejection by the United States of its idea for a joint cleanup campaign, Canada announced a plan last year to reduce SO_2 and NO_x emissions by 50 percent in its eastern half before 1994. Smelter cleanup alone will cost the country $211 million (U.S.), which seems like a large sum until you realize that damages from acid rain are currently estimated at $180 million a year. Smelters are a major target in the campaign. The country's Inco nickel smelter at Sudbury, Ont., is the largest source of SO_2 emissions in the world. Vehicle emission standards are also being toughened to cut down on NO_x emissions.

If the 50-percent cutback is achieved, Canada will have made the world's largest tonnage reduction of SO_2 emissions. But without a similar cleanup program by the United States, including NO_x reductions, Canada will not be free of its acid rain problem. As much as half the acid precipitation that falls on Canada comes from smokestacks and tailpipes in the United States.

MAKING PROGRESS

Norway and Sweden

Cleanup is also well under way in Norway and Sweden. Both countries have suffered extensive damage from acid rain. According to Earthscan, some 18,000 lakes in Sweden were acidified by 1982, and Norway's fish populations have declined in 2,600 lakes and in many rivers.

More than 70 percent of the pollution that causes these damages is imported from Western Europe and Britain. Nevertheless, Sweden and Norway decided to clean up their own act before asking for favors from abroad. Neither country has established adequate controls on NO_x, but Norway has cut SO_2 emissions by 30 percent in the last ten years and will tackle another 30 percent in the next decade. Sweden's SO_2 reduction program has cut emissions by nearly 60 percent—primarily by switching to low-sulfur fuels and nuclear power.

A report from Sweden's National Defense Research Institute concludes that the country's energy needs for the year 2015 could be produced by biomass, solar and wind power, and nuclear fuels. If this estimate is correct and a new policy is implemented, Sweden's domestically produced acid rain will practically vanish.

Sweden also has an ambitious liming program designed to bring the acidity in thousands of its lakes down to normal levels. By last fall the country had spent $22.5 million liming some 3,000 lakes. But the cost of the program and the continuing problem of acid deposition from other countries has led Swedish experts to consider the project a crisis-intervention measure, used only to protect important fisheries.

Perhaps Sweden's most important contribution to solving the international acid rain problem has been in disseminating information. The Swedish government has published many excellent books, brochures, articles, and posters to alert the international public to the effects of acid rain. Some of these are given to travelers at the border. The Swedish National Environmental Protection Board's Information Section (Box 1302, 3-171 25 SOLNA, Sweden) publishes a full-color magazine, *Acid*, that is available to anyone in the world at no cost.

Sweden and Norway appear to be ten years ahead of the United States in their education and research programs. They are also head and shoulders above any other country in their willingness to control their own emissions and to convince the rest of Europe to do the same.

A SUCCESS STORY

Japan

Faced with severe air-pollution and health problems, the Japanese government decided to impose very stringent emission controls between 1968 and 1978. Sulfur dioxide was cut by 73 percent after some 1,200 scrubbers were installed on smokestacks, even as electrical consumption doubled. Vehicle emissions were cut by 90 percent

through the use of catalytic converters, while auto efficiency increased by one third. The country now has the world's tightest limits on emissions.

FLOUNDERING

Europe

THOMAS ULASEWICZ, executive director of the Adirondack Park Agency, claims that the European continent is ten years behind North America in finding a solution to acid rain. The number of countries and their widely varying economic and political situations make problem-solving difficult. Yet the cost of delay could be huge: Western Europe's sulfur emissions are already as high as those of the eastern United States.

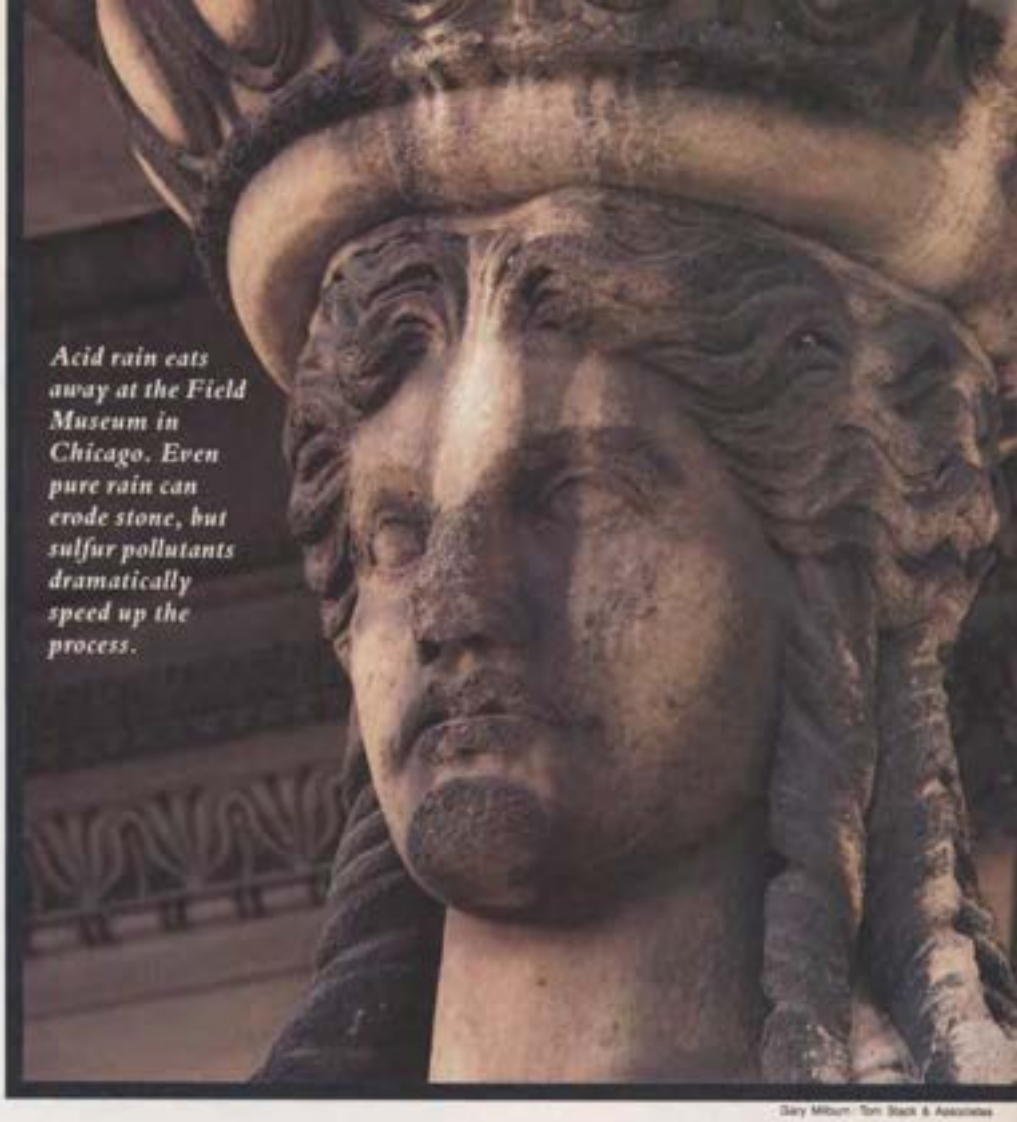
Britain is Western Europe's largest producer of SO_2 and the one least willing to ameliorate the impact of its pollution on countries downwind. Ironically, it was British scientists and authors who first recognized, named, and finally described the hazards of acid rain.

Since the "killer fog" that struck down thousands of people in London in 1952, Britain has worked hard to clean up urban air pollution. It has increased its use of North Sea gas and low-sulfur oil and coal. It has also built taller stacks, a measure that relies on air currents to carry pollutants away from British cities to other countries or out to sea.

Acid rain is not considered a serious problem by British officials, who deny responsibility for causing it elsewhere. In protest, the London office of Friends of the Earth has launched a tourist boycott. The group is urging people to spend their holidays elsewhere, and to write British hotels and other tourist attractions explaining why, using the slogan, "We Love Your Country—But Not Your Pollution."

West Germany was once similarly opposed to taking measures that would reduce its production of acid rain. At a United Nations convention held in Geneva in 1979 to discuss acid rain controls, the West German delegation argued that controls were too costly.

But massive forest die-offs have recently convinced West Germany to change its tune. More than half the nation's trees have been affected by *Waldsterben* ("forest death"). One foreign forester who visited the country's stricken woods said, "They looked like fading gray stubble on an old man's chin. The trees were completely dead as far as the eye could see."



Acid rain eats away at the Field Museum in Chicago. Even pure rain can erode stone, but sulfur pollutants dramatically speed up the process.

Gary Milburn - Tom Stack & Associates

The West German timber industry is concerned about an estimated $250-million annual loss from *Waldsterben*. A recent public opinion poll revealed that citizens consider this problem more important than the highly controversial issue of Pershing missile deployment.

Foresters here are convinced that acid rain, particularly the nitric acids produced by car exhausts, are the culprits: Nitrogen oxides now contribute 40 percent of West Germany's acidic deposition. The country is experimenting with lower speed limits, and will require cars sold after 1986 to have catalytic converters and use unleaded gasoline. The government is also pursuing a program aimed at reducing SO_2 emissions by 35 to 50 percent.

Word from Eastern Europe is guarded at best, but millions of acres of forests there are probably damaged as well. Poland, Czechoslovakia, Romania, East Germany, and the Soviet Union are all producing massive amounts of SO_2 by burning brown coal (lignite), which has a very high sulfur content. And they seem to be operating without any air-pollution controls.

The deterioration of old buildings in Europe is rapidly escalating. *Acid* magazine reported that air pollution around Krakow, Poland, will eat away a tenth of an inch of stone from old buildings and sculptures in the next decade. And the rates of lung cancer and heart disease in the city are alarming. Apple trees no longer bloom in spring. Poland is considered by many researchers to be the most polluted, most vulnerable country in Europe, if not the world.

In fact, practically no European nation seems to have been left unscathed by this chemical assault. Switzerland, Denmark, France, Austria, Greece,

Italy, and Holland all report damage. Unless a concerted antipollution campaign is launched involving all of Europe's nations and the Soviet Union, each government will probably continue to respond to the threat in exact proportion to the severity of its local impacts—until frightened or forced into integrated action.

AT RISK

Industrial Areas Worldwide

UNTIL RECENTLY, no one mentioned acid rain south of the equator, yet common sense assumed it was just a question of time. A survey conducted by the International Union for Conservation of Nature and Natural Resources has now described acid rain–related threats in Brazil, Australia, Thailand, and South Africa.

Saõ Paulo, a major Brazilian steel- and car-manufacturing city, has announced air-pollution reductions aimed at cutting emissions by 90 percent over four years. "It's very serious," says Paulo Nogueira Neto, head of Brazil's Special Secretariat for the Environment. In the heavy coal-mining region of Santa Catarina, the environmental secretary estimates that 80 percent of the local hospital patients have respiratory ailments caused by acidic pollutants.

With their huge oil refineries and factories, Johannesburg and Witwatersrant in South Africa also have serious problems with acid rain. Fallout is not quite as severe around Sydney, Australia, or in Thailand, but both governments have begun monitoring.

Acid rain even threatens South China, according to a Beijing newspaper. Coal-burning stoves and boilers are the likely culprits in this region.

AS JAPAN'S EXPERIENCE has proven, acid rain can be dealt with swiftly, effectively, and without necessarily lowering a nation's standard of living. Unfortunately, every nation that refuses to act—especially Britain and the United States—strengthens the positions of those holding up worldwide progress. As long as the United States persists in doing nothing but research, other nations will feel justifed in doing the same.

But as more and more countries experience the damages of acid rain firsthand, the tide of international opinion may turn. It has already turned to some extent: In 1979 the United Nations Convention on Long Range Transboundary Air Pollution produced a pact signed by 30 countries—including the United States, the Soviet Union, and many European nations—committing the signatories morally, if not legally, to reducing air pollution.

The U.N. Economic Commission for Europe went a step further. By April of last year it had convinced 21 nations to join what it calls The 30 Percent Club. Member nations pledge to reduce their SO_2 emissions by at least 30 percent by 1993.

In the final analysis, much will depend on each region's economic situation. Where the price paid for damages to society and the environment becomes high enough, change is likely to follow—as it has in Canada, Scandinavia, West Germany, and Japan.

Even the United States may be waking up, albeit slowly. In New York, Gov. Mario Cuomo signed the Acid Rain Deposition Control Act in August 1984. The first such legislation in the country, it is designed to cut emissions of SO_2 by 30 percent over ten years.

Welcome as the change is, a 30-percent reduction in these substances will not revive my Adirondack lake. Some scientists estimate that such a cut may only bring 20 percent of New York's acidified lakes back to life; no one knows what it will take to revive the forests. After all, a dead tree is a dead tree, and soils recover from acidification very slowly. Some scientists estimate that it may take a 60- to 90-percent reduction to bring about positive results.

But the saddest part of the story for me is that results may not be visible until after the year 2000. Many of us will be dead and buried before the Adirondacks' woods and waters can be restored to health. At the very least, our country must allow the long, slow healing process to begin—and work hard to prevent such tragedies elsewhere. ■

ANNE LABASTILLE, *a wildlife ecologist and registered Adirondack guide, is the author of* Women and Wilderness *(Sierra Club Books, 1984) and* Woodswoman *(Dutton, 1978).*

White crosses made by protestors mark trees damaged by acid rain near Dragahn, West Germany.

Dying trees in eastern France's hard-hit Vosges forest: Evergreens are more vulnerable than deciduous trees.

A forester in the Vosges points to a classic sign of acid rain damage—the yellowing of evergreen needles.

Acid damage to trees can show up on bark and in growth rings. The photo at right was taken in West Germany.

Placid as it looks, researchers say Fox Swamp Lake in Pennsylvania's Pocono Mountains is acidified—a condition that endangers all the life that depends on it.

Lime is sprayed on a dying forest in West Germany's Harz Mountains in an attempt to counter the effects of soil and groundwater acidification. It is unknown how successful such experiments will be.

Mark Vaz

Leaves of Green

Sierra asked a group of people who have made significant contributions to the environmental movement—writers, scientists, activists, educators, politicians, and others—for a few words about the books that have meant the most to them. It seems our request often struck a sympathetic chord: Most who responded gave a generous measure of time and care to their selections.

The nominated titles range from the classically familiar to the strikingly obscure. Some have remained in print since their long-ago first editions, while others were never widely read and may be nearly impossible to find today. Looking over the various titles, we see many old friends—John Muir, Henry David Thoreau, Rachel Carson—seated comfortably with a group of new acquaintances, whose books, we hope, will become better known as a result of their inclusion here. In most cases we've indicated each book's original year of publication; your local library or bookseller can help you track down recent editions.

"We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and the mountains."

So wrote Aldo Leopold, remembering a time when he was a young hunter full of "trigger itch," in his classic *A Sand County Almanac* (1949)—the book cited most often by our survey respondents.

"It has only been during the last ten thousand years that we have forgotten how to think like a mountain," laments Dave Foreman, editor of the radical environmental journal *Earth First!* "For most of our million years as human beings it was not a lesson we needed to learn; it was innate, ingrained in our being like Leopold's 'wild things and sunsets.' *A Sand County Almanac* is not only the most important conservation book ever written, it is the most important book ever written, and the clearest way home, except for a visit to the wilderness itself."

Pulitzer Prize–winning author Wallace Stegner agrees with that heady assessment, noting that among books on the environment he knows "nothing better, purer, or straighter" than Leopold's classic. "It bears many re-

readings, and it steadies frivolous minds like mine. I don't think I ever saw clear to the edges of the environmental movement —if I yet have—till I had read Leopold at least twice."

Environmental historian Donald Worster (*Nature's Economy, Rivers of Empire*) observes that "The Land Ethic," the essay that concludes *A Sand County Almanac*, is "the clearest and most universal advice we have on how modern people can live in harmony with the Earth. The more I read it, the more convinced I am of its essential wisdom, its brilliance, and its possibilities."

Another suggestion came from Colin Fletcher (*The Complete Walker, The Man Who Walked Through Time*), who cited Lewis Thomas' *The Lives of a Cell* (1974) for its ability to "pry the mind more widely and joyfully open." Thomas was also a favorite of attorney, author, and environmental activist Denis Hayes, who finds Thomas' writings "thoughtful, provocative, and informative, whether discussing arcane (but fascinating) trivia or addressing the central issues of our time."

Some may find a darker world view in the works of historian Lewis Mumford, praised by author and *San Francisco Chronicle* environmental writer Harold Gilliam as being "consistently decades ahead of nearly everyone else in spotting the dominant forces of our culture, both positive and negative. In the age of the myopic specialist, he is the supreme generalist. His central thesis is the need to move from a mechanistic to an organic view of life—a proposition that contains within it the seeds of renewal, both for individuals and our civilization." Gilliam recommends the anthology *Interpretations and Forecasts: 1922–1972* (1973) as the best introduction to Mumford's lifetime output, which includes such "magisterial" books as *The Conduct of Life, The Transformation of Man, The City in History,* and *The Myth of the Machine*. The latter was singled out for special praise by author Edward Abbey, who called Mumford "the greatest living critic of the modern military techno-industrial state."

Another visionary book, and one of the most influential to the course of the environmental movement over the past quarter century, is Rachel Carson's *Silent Spring* (1962), nominated by several of our panelists, including Jimmy Carter and former Interior Secretary Stewart Udall. Natural history writer Ann Zwinger (*Run River Run, A Desert Country Near the Sea*) calls Carson's classic "a landmark book for courage, for information, a pivotal book for change in this country. It shows what one intelligent, caring, courageous person can do to save the world." Zwinger also praises Carson's earlier book, *The Edge of the Sea* (1955), "for sheer enchantment of writing combined with scientific knowledge."

Although writers such as Carson and Mumford work for change through awareness, others look toward direct action. Ed Abbey followed his endorsement of Lewis Mumford with a pitch for Dave Foreman's *Eco-Defense: A Field Guide to Monkey-Wrenching* (1985), which he calls "an essential handbook for those who wish to take part in the ongoing, last-ditch defense of the little that remains of the great American wilderness, basis of our primary freedoms. This book, like the flag, the Bible, and the democratic rifle, should be among the few, fundamental possessions of all who call themselves patriots."

Foreman returns the compliment by endorsing Abbey's *The Monkey Wrench Gang* (1975), which he says caused considerable concern within the environmental community because it was "profane, irreverent, passionate, violent, even—gasp!—*funny*." Employed as a field representative for The Wilderness Society when Abbey's book was published, Foreman reminds us that some environmentalists were "secretly cheered" by *The Monkey Wrench Gang*, whose unconventional literary qualities were "exactly what the staid environmental movement needed. Maybe that would kick us in our plump, comfortable butts; maybe ecology would even become subversive to the dominant paradigm in practice as well as in theory."

Pulitzer Prize–winning poet and anthropologist Gary Snyder provided us with two unorthodox choices: Richard Nelson's *Make Prayers to the Raven* (1983) and Burton Watson's translation of Ssu-ma Ch'ien's *Records of the Grand Historian* (1977). Nelson's book is an "ethno-natural history" describing the author's stay with the Koyukon people of Alaska's Yukon Basin. "Nelson hunts, traps, and eats with the people he is living with," Snyder writes, "and gives us a fish-by-fish, bird-by-bird account of what they know, say, and believe of each creature in their realm. What we learn is that these peo-

ple are practical, hardy, tough, and do not shrink from the blood and guts their life requires. But they love beauty and they love animals. This book is a window into a totally other world view which to some degree may have been the world view of most of our archaic ancestors."

Grand Historian is a study of ancient power that in Snyder's view complements a study of the natural world. "Understanding nature, and what the Buddhists call 'original nature' or that aspect of human nature that is part and parcel with the essential nature of Nature, is not all that difficult, if I may paradoxically say so. What's *hard* to grasp is civilization. Though I have read widely in the historical literature east, middle, and west, this collection of essays and records is the one that gave me what I fancied to be the greatest understanding of the dynamics of civilization. It shows how certain persons are drawn to power, and then steel themselves to practice the grim duplicities by which they survive, with object lessons in the failures of 'good guys' and cases of exhilarating success following on incredible boldness."

Sierra Club Chairman and former Executive Director Michael McCloskey selected Clarence J. Glacken's *Traces on the Rhodian Shore: Nature and Culture in Western Thought* (1967) as "a revelation in tracing the roots of interest in nature and its protection from earliest times." McCloskey also chose George Perkins Marsh's *Man and Nature* (1864) as "the pioneering work by an American author in laying down the foundations for modern conservation concerns, particularly as they relate to conserving forests and watersheds."

The Worldwatch Institute's valuable "State of the World" series, published yearly since 1984, was praised by Denis Hayes as "the single best way to stay current on a wide range of issues." Institute president Lester A. Brown also recommended the series, while asking that we forgive him for selecting a project with which he's been so closely associated: "The fact that there are more than 100,000 copies of the 1984 and '85 editions in print in five of the world's seven major languages, and that *State of the World 1985* has been adopted for

course use in some 170 colleges and universities, indicates that this is not my exclusive opinion."

A number of older works of conservation literature were also mentioned. Harold Gilliam named John Muir's *My First Summer in the Sierra* (1911), but made it clear that the choice is "symbolic," because it's impossible to select one of Muir's books superior to the others. "No one has written in English more eloquently about the experience of nature," Gilliam says. "His writings are indispensable guides to the moral imperative of our time—to find again our roots in the land around us."

Ann Ronald (*The New West of Edward Abbey*), chair of the English department at the University of Nevada–Reno, named Henry David Thoreau's *Walden* (1854) as "the single most important piece of nature writing in American literature. With its insistence that we pare our lives down to the basics, that we live closer to nature, that we need the 'tonic of wilderness,' *Walden* sets an imaginative pattern to inspire generations. No one who reads or writes about the wilderness or the natural world can (or should) escape its influence."

Two respondents mentioned the *Travels* of William Bartram, edited by Francis Harper (1791). "Bartram furnishes a marvelous view of wild nature on the colonial frontier and beyond it," says writer and educator Michael Frome (*Promised Land—Adventures and Encounters in Wild America, Battle for the Wilderness*). "His focus to a large extent is on the botanical wonderland of the South, but he also talks about Native Americans and their harmony with the land. He and James Fenimore Cooper ought to be basic in early conservation reading." David Rains Wallace (*The Klamath Knot, Dark Range, The Turquoise Dragon*) called Bartram's *Travels* "the first American book—perhaps the first book of any kind—to explore wilderness chiefly as a source of aesthetic delight and spiritual enrichment."

Wallace was also influenced by Loren Eiseley's *The Immense Journey* (1957). "Eiseley's poetic vision of evolution gave me my first inkling that scientific knowledge could be more than a quantitative basis for technology, that it could also be the raw material for art and

myth, as Eiseley, Bartram, Thoreau, and Muir used it."

Some people in our survey sample mentioned a book or two that no one else thought to include. Raymond Dasmann, professor of environmental sciences at the University of California–Santa Cruz, writes, "Jonathan Schell's *The Fate of the Earth* (1982) may be the only book that is really well written concerning the threat of nuclear war. It made me realize that I must do more than I had been doing."

Poet Robert Bly, whose anthology of Thoreau's poems and prose will be published this year by Sierra Club Books, called attention to his translation of *Times Alone* by Antonio Machado (1984). "Machado and Lorca are considered the greatest Spanish poets of this century," he says. "Machado is only now beginning to be known. He is the greatest poet of landscape since Keats, and his poems show 'the soul and the countryside.'"

Stewart Brandborg, wildlife ecologist and former executive director of The Wilderness Society, characterized Gifford Pinchot's *Breaking New Ground* (1947) as "an insightful revelation of the role played by corporate timber interests in exploiting our public lands." Brandborg also recommended Sigurd Olson's *The Singing Wilderness* (1956), "a philosophically important reflection on nature, wilderness, and human values."

Ecotopia author Ernest Callenbach praised *The Ohlone Way* by Malcolm Margolin (1978) as "a beautiful evocation of the Indian culture that existed in the San Francisco Bay area before the whites arrived—living in a peaceful, ecologically balanced, and spiritually satisfying way."

The longest list came from Annie Dillard, Pulitzer Prize–winning poet and author of *Pilgrim at Tinker Creek*, who enthusiastically recommended "all the old 19th-century naturalists and travelers—[Charles Spence] Bate and Darwin, Robert Louis Stevenson, Wallace, anyone who went to Arabia; Thoreau's journals, John Muir in Alaska on the stupidity of loggers; Gretel Ehrlich's *The Solace of Open Spaces*, Edwin Muir's autobiography; W. H. Hudson, J. Henri Fabre; the tetralogy by Edwin Way Teale, *Outermost House* by Henry Beston,

Nature's Year by John Hay, *Moby Dick* by Herman Melville, *Common Ground* and *The Primal Place* by Robert Finch, *Desert Solitaire* by Edward Abbey."

Situation Ethics by Joseph Fletcher (1966) "evaluates moral principles in the setting of the total situation in which action takes place," according to Garrett Hardin ("The Tragedy of the Commons," *Filters Against Folly, Stalking the Wild Taboo*). "Situation ethics is ecological ethics. Fletcher's creation is the only ethics that meshes with ecological insight." Hardin also recommends *Ecoscience: Population, Resources, Environment* by Paul R. Ehrlich, Anne H. Ehrlich, and John P. Holdren (1977), which he calls "sound in theory and encyclopedic in coverage."

THREE BOOKS BY Barbara Ward —*Spaceship Earth* (1966), *Only One Earth* (with Rene Dubos, 1972), and *Progress for a Small Planet* (1979)—were nominated by futurist and author Hazel Henderson (*Creating Alternative Futures, The Politics of the Solar Age*). "Many are unaware that Ward coined the term 'spaceship earth' and was the only economist other than Kenneth Boulding to consistently point out the need to overhaul economic theories to take the environment into account, while not shortchanging concern for equity in the distribution of resources," Henderson says. "Her global approach was an inspiration to me."

University of Arizona English professor Peter Wild (*Pioneer Conservationists of Western America*) told us that *Man's Dominion: The Story of Conservation in America* by Frank Graham, Jr. (1971) is "hands down still the best, most entertaining and accessible overview of conservation history for the general reader. It provides the context in which present activism takes place."

"A book that had enormous influence on my professional career went under the modest title *International Conflict for Beginners* (1969), by Roger Drummer Fisher, a Harvard law professor," writes R. Michael Wright, vice-president of the World Wildlife Fund. "Fisher makes a convincing case that if one seeks to influence the decisions of others (which is, after all, the essence of international conservation), one must be able to understand the other person's point of view. A rather similar point underlies Saul Alinsky's *Rules for Radicals: A Practical Primer for Realistic Radicals*" (1971).

Finally, Wallace Stegner adds that his choice of *A Sand County Almanac* "assumes that my principal area of expertise and interest is the environment. It may be, though I have spent my life studying literature, and trying to write it. To pick a single book out of all that mass is impossible. But if I were stranded on a desert island and could stick only one book in my life-jacket, I would be happy if, when I landed, it turned out to be the short stories of Anton Chekhov. If literature is about the examination of life, if it speaks from sensibility to sensibility and temperament to temperament, and if its end ought to be the raising of our consciousness and the softening and warming of our humanity, Chekhov will do as well as any single writer I can think of. The stories have the taste and smell of the land in them." ■

MARK VAZ *is* SIERRA*'s editorial intern.*

These Homes Are for the Birds

Jean Snyder Pollock
and Robert Pollock

You've probably noticed the round, cup-like nests of sticks and leaves that some birds build in trees. But did you know that birds also build many other kinds of nests? In fact, each species builds a nest that is different from the others. Some birds nest on the ground; others nest in sand, in tree holes, in lakes, in the desert, on rocks, or in tall grass. There are even birds that build nests behind waterfalls.

All birds build nests for one reason: to lay their eggs and raise their young (called *nestlings*) in a safe place. Eggs and nestlings are easy targets for predators; so are parent birds that are warming the eggs (*brooding*) while the birds inside are growing.

Each type of bird has developed its own way of keeping its nest safe. A waterbird that is clumsy on land can't build its nest in a bush, so it nests in the tall grass near the edge of a lake. A bird that lives in the desert might have a hard time finding leaves and moss, so it uses twigs, dried grasses, and feathers for its nest.

Most birds make their nests safe by hiding them. A nest might be hard to see because its colors blend into the surroundings, or because it is hidden in a leafy tree. Birds can also protect their eggs by making their nests hard to reach. A nest hanging on a cliff high above a river would be too dangerous for most nest-robbers. Birds who nest in tree holes can make the hole too small for other animals to get in.

Nesting in colonies—with large groups of other birds—also offers protection. Tropical birds sometimes nest near a colony of dangerous insects, or even inside the nest of a large, fierce bird that would make predators think twice before approaching. Large birds such as eagles and hawks can defend their nests by scaring off enemies.

The simplest nests are made on the ground near a stone or tuft of grass. The bird sits on the ground and turns around and around, scraping out a hollow with its breast.

© Jeff Foott, DRK Photo

Like ducks, loons, geese, and other aquatic birds, grebes spend most of their time in the water. The western grebe hardly ever flies and is clumsy on land, so it builds its nest right on the lake. Reeds and marsh plants are matted together and a little hollow is made in the middle. The nest is usually attached to living reeds so it won't float away.

Robert and Linda Mitchell

The cliff swallow is like a potter: It takes mud, straw, and grass and shapes it into a lopsided pot or flask. Cliff swallows often nest in colonies, creating giant beehive-like nesting communities on the sides of steep cliffs. Nowadays you might also see a cliff swallow's nest right under the roof of a building or hanging off a bridge.

Robert Pollock

This junco (a kind of chunky sparrow) has found a substitute for the bushes, tree stumps, and woodpiles where it usually nests: a rusty tin can. Its bundle of dried grass lined with cow or sheep hair makes a nest that will blend into the surroundings. If an intruder comes too close, the junco will fly about, making sharp alarm calls to try to drive the animal away.

Jeff Foott

The bald eagle often returns to the same nest, making it bigger each year. Its simple but large nest of sticks is built high in a tree or on a cliff near the water, so the bird can fish nearby. Eagles' nests are high enough to be safe from most large animals, and eagles can scare off smaller intruders.

Common murres are water birds. They nest in huge groups on the ledges of steep cliffs, usually on islands—a very hard spot for predators to reach. The murre doesn't build any nest at all: It lays only one egg, shaped like a pear so it's less likely to roll off the ledge. The adult birds all stand together to warm and protect their eggs.

Robert Pollock

Like other woodpeckers, the northern flicker will build its simple nest in a tree hole, fence post, building wall, or similar place with a hole about two or three inches across. Birds that nest in tree holes have a better chance of protecting their nestlings than birds that nest in the open, because the entrance to the nest is so small.

Open-cup nests are made in almost the same way: The bird collects twigs, leaves, and other material in a pile, then sits on it and turns around to make a bowl shape. These nests are often lined with soft feathers and moss.

Some birds build very complicated nests by weaving material into a dome. And many birds will even go to the trouble of decorating their nests with shells, lichens, or scraps of paper and cloth that people have thrown away.

These days, more and more birds are using buildings, bridges, and man-made objects for their nests, because the wild places where they used to nest are gone. Forests and fields are being turned into cities and towns, and many of the best nesting spots are already taken. You can help neighborhood birds by learning to build a birdhouse. Or you can leave them soft rags and paper towels to use in their nests.

Jeff Foott

Ospreys sometimes nest on telephone poles, chimneys, or—like this one—on a weather tower instead of the usual high tree. Like eagles, these birds of prey often use the same nest year after year, but the osprey's nest has more junk in it: It's made not only of sticks, weeds, and grass, but old shoes, bones, or whatever else the bird can find.

If you want to look for nests, the best time is spring or early summer, when most birds find a mate, build a nest, and lay their eggs. Look for a bird that is carrying food—it is probably taking a meal to its hungry nestlings. Follow the bird if you can, but be sure not to get too close. Humans, like all predators, make breeding birds very nervous. If the bird has food but will not feed its nestlings, you are too close and should move back. If you frighten the parents, they may decide to abandon the nest, leaving the baby birds to starve. Using binoculars is the best way to watch birds without disturbing them. ■

© Frans Lanting

Terns don't make much of a nest; they just lay their eggs in a little pile of twigs or hollow in the sand. These sooty terns return to the same island every year to nest. Because it is such a good nesting spot—hard for land animals to reach—a big group of terns will share the island and nest together. This also helps protect their eggs from other birds.

The northern oriole weaves a hanging basket for its eggs from grass, animal hair, string, bark, and plant fibers. The long, narrow entrance makes it hard for predators to reach the nestlings at the bottom. Orioles build their nests on the ends of small branches that won't hold the weight of bigger animals. This oriole is bringing a caterpillar to its newborn young.

ROBERT AND JEAN SNYDER POLLOCK *are a writer and photographer living in Allenspark, Colo. Their article "Campground Critters" appeared in the July/August 1984* Sierra.

The Irascible Savior of Assateague Island

Linda G. Weimer

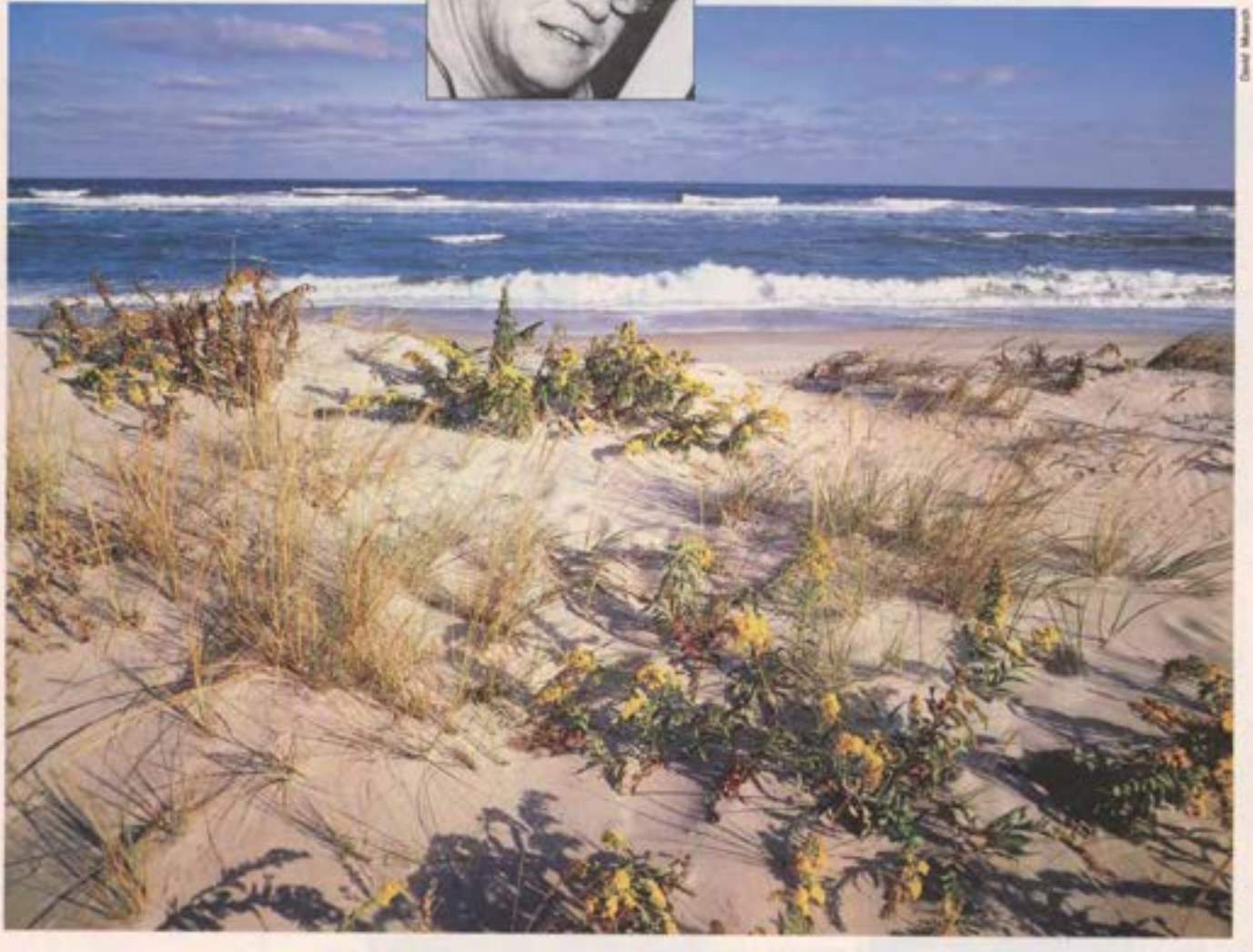
A NUMBER OF successful New Yorkers have retired to the slower pace of Maryland's Eastern Shore over the years, but none have done so with the impact of the late William E. Green. A heating contractor with an eighth-grade education, Green gave the last ten years of his life—and the modest fortune he had saved—to preserving Assateague Island by bringing it into the public domain.

Green lived long enough (he died in 1963, at age 57) to see the Department of the Interior declare a protective interest in the 37-mile-long barrier island off the Atlantic Coast, but not long enough to see Congress create the Assateague Island National Seashore in 1965.

Green and his wife, Alvirta, were drawn to the placid marshes of the Eastern Shore in 1945, when they began buying farmland in Worcester County. If Maryland were a mitten, the Eastern Shore would be its thumb. Situated on a peninsula more than 200 miles long, the region was separated from the rest of Maryland until 1955, when a bridge was built across Chesapeake Bay. By the time the Greens arrived at their new home, two centuries of isolation had produced a subculture that seemed to abhor change and resent anyone who tampered with the Eastern Shore way of doing things.

But William Green, a self-made success in business, was a born tamperer—and an impatient one. In 1947 his wife and two children moved to the Eastern Shore property while he began to disengage himself from on-site supervision of

"I have to use all the tools open to me as a private citizen—one of which is a very big mouth."



his firm. When Green took up residence in the village of Public Landing in 1953, the family owned about 1,000 acres stretching across two miles of Chincoteague Bay waterfront.

Green's farm looked out over several miles of coastal bay waters to the long, flat island of Assateague—an island so low that several times a year the Atlantic would flood portions of it to connect with Chincoteague Bay.

There was no bridge to the island, but family excursions via motorboat soon became a habit. What the Greens found on Assateague was a pristine beach much like that encountered by the first white settlers. (There were also about a dozen private hunting lodges and a few Coast Guard stations, but most of the island showed no signs of human activity.) Averaging less than a mile in width, the island was a home to fox, otter, deer, muskrat, raccoon, and the unique wild pony of Chincoteague, which is thought to be descended from livestock carried aboard a Spanish galleon that was wrecked in the 1600s. Assateague was also an island of birds: seabirds, shore birds, wading birds, and migrants. The southernmost 15 miles (extending south from the Virginia line) had been a national wildlife refuge since 1943, and was a seasonal home to millions of waterfowl.

On this island, Green indulged his need for contemplation. According to Wendell Bradley, a *Washington Post* reporter who knew him well, it was while immersing himself in this solitude that Green became aware of how rare and valuable such places had become, especially near the cluster of large cities just beginning to turn into the eastern megalopolis.

Green was sitting in the kitchen of his farmhouse one afternoon in 1953 when his son Bill returned from a trip to the island to report that surveyors appeared to be staking out lots there. Father and son returned to the island and confirmed Bill's suspicions. Green later recalled his immediate reaction: "When you see streets being laid off on sand that's under

Assateague Island has been preserved as a national seashore since 1965—largely because of one person's determination.

water part of the time, you know a damn swindle's going on."

In fact, promotions had been appearing in the Washington, D.C., media since 1951 touting a new subdivision on Assateague named Ocean Beach. The principal investor, Leon Ackerman, had bought a 15-mile stretch on the ocean side and was enjoying good business during the storm-free summer season, despite the fact that prospective buyers had to be shuttled to the island on a three-car ferry.

Whatever salespeople promised or didn't promise in the way of sewage treatment, streets, or other necessities is lost to us. The fact remains that by the time Green became aware of the development, hundreds of lots had been sold, and the only public service that ever materialized was a narrow paved road. Purchasers were told that building houses was their own option.

The glaring unfitness of Assateague for residential development, coupled with his own love for the island, gave Green a mission. Early on he saw the similarities between the local situation and that of the fast-developing shoreline of Long Island, N.Y., during the 1920s. Green went to see Robert Moses, who had used the concept of a public authority to rescue an area on Long Island that eventually became Jones Beach. Moses' legal staff drew up a model bill for Assateague that called for the island to be managed by an appointed public authority of Worcester County. The construction of day-use facilities and a bridge to the island would be financed by bonds issued by the authority. The loans would be repaid by charging admission fees to Assateague. Because no tax monies would be required, Green felt certain the plan would appeal to the Eastern Shore's conservative natives.

The next stop on Green's crusade was the Worcester County Board of Commissioners, whose approval would be crucial in getting enabling legislation passed by the state. This three-man panel was intimately involved with every aspect of the county's political and economic life, and was aided in its deliberations by the county attorney—who was employed by developer Ackerman—and the chair of the county's delegation to Maryland's Democratic Central Committee, a lot salesman. But the issue was more controversial than even these apparent conflicts of interest might suggest. The commissioners simply saw in Assateague the potential for a second Ocean City, the Maryland resort capital that already accounted for a large fraction of the county's assessable tax base.

In January 1955, Green first raised the issue of a public authority for Assateague at a Worcester County Commissioners meeting. According to the minutes, the matter was referred to the commissioners' attorney—none other than Ackerman's lawyer.

Now Green's stubbornness began to emerge. Sensing his weak position as a lone citizen, Green secured the support of the Lions Club in Snow Hill, the county seat. By September he had further expanded his base through contact with the Worcester County Improvement Association, which concerned itself with the future of Assateague Island as well as with a number of other progressive causes.

After 17 visits to the county commis-

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William E. Green on the site of a planned development on Assateague Island. Green distributed this photo to Maryland legislators to show that the island is subject to flooding.

sioners, Green was handed a letter with their decision on December 13, 1955. Not surprisingly, they did not approve of the notion of a public authority for Assateague. At the next meeting, an irate Green returned with a letter of his own, which referred them to an article in the Maryland Constitution that states: "When the ends of government are perverted, . . . the people may, and of right ought, to reform the old or establish a new government."

This incident was characteristic of Green, says Paul Cunningham, who published a county newspaper at the time. "One thing he never learned, or didn't care to," Cunningham recalls, "is that on the Eastern Shore, when someone blocks your way, you go under him, around him, or over him. You don't confront. But Bill Green knew only the direct approach."

Undeterred by the commissioners' decision, Green purchased the 12 volumes of the Maryland Code and spent months in preparation for the next-higher tribunal, the state government. Nor did he completely give up on the local front: He took editors and reporters from the county's three newspapers out to Assateague to show them the shifting dunes and high water table. When news articles stemming from his guided press tours became less frequent, Green took out self-financed advertisements for the preservation of Assateague. The ads appeared often in the local press between 1955 and 1959. One of them advised fellow citizens that "no other county in the state of Maryland is so blessed . . . by creation of God as Worcester. . . . This is the birthright of your children, and their children and their children's children ad infinitum."

Before the primary election of 1958, Green printed a full-page open letter challenging all candidates for state and local office to declare their positions on the future of Assateague. He then printed the responses, all of which were noncommittal or opposed to the establishment of a public authority.

Even those who supported the concept had trouble accepting Green's constant pushing, reports publisher Cunningham. But no one could fault his dedication. Indeed, the island's preservation was now a full-time occupation. Moreover, it was an occupation that required spending money but brought none in. According to county records, Green began selling off and mortgaging his farm. A total of 26 transactions would eventually leave his family with only a few of its original thousand acres at his death.

Beginning in January 1955, and every year thereafter until his death, Green went to the state capital, Annapolis, when the General Assembly convened.

He laid copies of his petition for a public authority on each delegate's desk on opening day. According to *Post* reporter Bradley, "He appeared at hearings uninvited, stormed into committee meetings, fired off telegrams to state senators, delegates, department heads, and the governor" demanding responsible consideration of the management of Assateague.

"He was pretty much looked upon as a nut," recalls William James, then a legislator and currently Maryland's state treasurer. But Green said of his own approach, simply and characteristically, "I have to use all the tools open to me as a private citizen, one of which is a very big mouth."

The self-avowed bigmouth had also mastered the procedures governing the General Assembly. The House majority leader, who was maligned in one of Green's petitions, told his peers, "This is insolent, rude, and unkind. But, gentlemen, he knows the rules perhaps better than some of us do. He has a right to a hearing."

Despite Green's stormy relations with officials, his authority bill passed the House of Delegates twice, only to be bottled up in the legislature's other house by a senator from the Eastern Shore. Green decided to run for office himself, and received 485 of the 3,151 votes cast.

Meanwhile, Green's colorful assaults succeeded in getting him and his cause mentioned in the influential Washington and Baltimore press. These papers began asking the same questions he had asked all along: Who is going to install the expensive sewage-treatment facilities for a seashore community? Who is going to keep the dunes bulldozed high enough to protect the development from overwash?

Green gained strategic friends in 1960 when Mabel Cohen, the wife of his physician, was named legislative chair of the state's Federated Garden Clubs. The club's members added their protests against private development even as the number of lots sold passed the 2,000 mark.

Lot owners, impatient to build their seaside cottages, thought they glimpsed fulfillment when the General Assembly appropriated funds for a bridge to Assateague in 1962. This commitment by the

Tired and sick, William Green took his case for protection of Assateague Island to the Maryland state house one last time.

state put added pressure on Green. It was in March of that year, just as the year's legislative session was about to end, that nature agreed to make a political statement. The worst northeaster in years brought high tides that devastated 15-foot dunes and destroyed half of the nearly 30 cottages that had been built on Assateague Island.

Much of the mid-Atlantic coast suffered extensive damage from the storm. Stimulated by the new federal Bureau of Outdoor Recreation, which called for more shoreline recreation areas, Interior Secretary Stewart Udall announced in a meeting with governors of the affected states that he felt "Assateague should be held in its entirety for park purposes and wildlife preservation." Udall recommended a joint federal-state study; Maryland's Gov. Tawes acquiesced.

In May of that year, the *Baltimore Sun* credited Green's "relentless prodding" for the fact that responsible decisions appeared to be in the offing. But Green didn't have much patience with studies that asked questions to which he already knew the answers. When the Maryland General Assembly convened in January for its 1963 session, he was there again with his bill for a public authority; only this time he was working under the additional burden of illness. The previous fall, his raspiness and chronic cough had been diagnosed as cancer of the lung and larynx, and he was given a poor prognosis for recovery.

"His lighthearted disregard of his approaching death touched Dr. Cohen and myself," Mabel Cohen recalls. "'You've fought your fight—now quit,' my husband would tell him. 'I will *not* quit,' said Mr. Green."

In March 1963 the state House Ways and Means Committee scheduled a hearing to discuss the future of Assateague Island. Green was confined to a wheelchair by that time, and no ambulance could be found to take him the 110 miles to Annapolis. Having failed to dissuade Green from his cause, Dr. and Mrs. Cohen were enlisted to join it. They put a mattress in the back of their station wagon and drove the weakened man to his last appearance in the capitol.

The Cohens took upon themselves the bulk of the conservationist presentation at the hearing. Over the bitter

objections of the committee chair, they successfully called for testimony from the Maryland Department of Health, which opposed the sale of lots in an area with no sewage system. They pinned a map of a subdivided area of Assateague to the wall and discussed the inevitable damage that would occur to homes built there.

Having saved his energies, Green then made the summation in typical style. "We maintain that Assateague Island on the whole is unfit for human habitation," he declared, "and the area you see in front of you is unfit for hogs."

After the hearing, a number of state officials and legislators with whom he had locked horns and traded insults for nine years came over to his wheelchair and expressed their good wishes for his health. "What really got to them," says *Post* reporter Bradley, "was the totality of his commitment."

Green remained on top of his cause until the final two months of his life. "I believe he saw that it was headed for a national park," says Mabel Cohen. "Even though this wasn't his favored type of management, at least he knew it wouldn't be another Ocean City."

Green spent the rest of his days at his farm home. He died on September 1, 1963.

In 1956, Green had warned: "The people of this county should remember that the public domain extends beyond their own bounds. U.S. citizens in other cities, counties, and states also have an interest in Assateague Island. Eventually their pressure will force the opening of this beautiful stretch of undeveloped beach." His forecast proved correct in 1965, when, after deliberations that spanned two sessions of Congress, Assateague Island was designated a national seashore.

Dr. and Mrs. Cohen were invited to the White House for bill-signing ceremonies hosted by President Johnson. Mrs. Cohen recalls that no mention of William E. Green was made. Nor is there any visible commemoration of his contribution at Assateague, where nearly 2.5 million visitors each year enjoy the fruits of his tireless labors. ■

Linda G. Weimer, a writer from Pocomoke City, Md., is former chair of the Sierra Club's Greater Baltimore Group.

Will Feds Take the Leap?

COLUMBIA RIVER GORGE

CUTTING THROUGH the Cascade Mountains, the mighty Columbia River has sculpted a sheer basalt gorge that separates the states of Oregon and Washington. On either side are waterfalls, canyons, and ecological diversity ranging from old-growth rainforest in the west to oak-covered grasslands, sagebrush, and sand dunes in the cold desert 70 miles east.

Despite three big dams across the Columbia and an interstate highway along the Oregon shore, much of the scenic beauty of the gorge remains. But proposals abound for timber sales, mining operations, and new hydroelectric developments on the river's tributaries. Just east of Portland the valley has also become the target of land speculators.

Because the land at risk crosses two states, conservationists are turning to the federal government for help. "After nearly a decade of working for the establishment of a national scenic area here, we are hoping that 1986 will be the year Congress finally acts," says John Karpinski of the Sierra Club's Columbia River Gorge Task Force.

So far, Congress has not hit upon a successful formula to save the valley. But in February the Oregon and Washington congressional delegations introduced three different bills—making the future of the gorge anything but clear.

Senators Mark O. Hatfield and Robert Packwood (R-Ore.) and Slade Gorton and Daniel J. Evans (R-Wash.) have introduced a bill that would designate the 280,000-acre Columbia River Gorge National Scenic Area, administered by a regional commission of local and state appointees. Conservationists, led by the Sierra Club and the Portland-based Friends of the Columbia River Gorge, say the legislation does not ensure that the commission would act to protect the gorge.

Consequently, Reps. Les AuCoin (D-Ore.) and Don Bonker (D-Wash.) have put legislation in the House hopper that would give the Forest Service significant power over the commission and strengthen other portions of the bill.

Meanwhile, Reps. James Weaver (D-

Ron Watson

Snow graces Columbia River Gorge, a candidate for protection in three bills this year.

Ore.) and Mike Lowry (D-Wash.) have introduced yet another bill, nearly identical to the legislation written and sponsored by Packwood in 1984. It would establish a national scenic area administered by the Forest Service—an approach that has been rejected repeatedly by state and local officials.

Conservationists are working for improvements in the two House bills, although both bills fail to protect some important Columbia tributaries.

"We are very pleased that Reps. AuCoin and Bonker introduced their legislation, but frankly, it's a bare-bones bill," says Diana Hinton, Columbia River Gorge coordinator for the Club's Oregon Chapter. "Over the last few months we have shown how much we want a bill by negotiating down to our bottom line, maybe even below it. Now it's up to Congress to enact a bill that will truly save the Columbia River Gorge."—*Jim Baker*

Laws Discourage Land Preservation

HIGH POND, VERMONT

WHILE WORKING to protect a secluded, unspoiled place called the High Pond Preserve, Vermont conservationists have run into a peculiar irony. Their state is famed for its high environmental consciousness, yet a state program to reduce taxes on land used for farming and timbering does not apply to natural areas.

"There's a tax subsidy for land that is disturbed, but no tax subsidy for land that is preserved," says Robert Klein, Vermont field director for The Nature Conservancy.

The late W. Douglas Burden spent nearly 20 years acquiring High Pond and planning its preservation. Used for research by Middlebury College, the wooded tract crosses four towns and includes a deep, unspoiled pond and a rare stand of virgin timber. In 1965 Burden established the Vermont Wild Land Foundation, to which he deeded land as he bought it until the preserve encompassed 2,200 acres.

The town of Pittsford first taxed the

land in 1975. The foundation sued for tax relief on the grounds that restrictions on development in the deed lowered the market value of the property.

Burden died in 1978. A Vermont superior court judge upheld High Pond's tax exemption that year, but the decision was reversed in 1979 by the state supreme court. Suit was followed by countersuit, ending in defeat for High Pond's trustee. When the foundation couldn't pay the taxes imposed, Pittsford put 1,200 acres up for sale. At the foundation's request The Nature Conservancy stepped in, paid $20,000 in overdue taxes, and acquired not only the Pittsford land but also the rest of the preserve.

Klein says Vermont is one of the few states where the tax structure serves to discourage ownership by private conservation organizations. He says the state's nearly mythical beauty is "just a coincidence."

The Nature Conservancy continues to pay the taxes at High Pond, but the threat of another tax sale remains. Klein hopes for a legislative reform of the state's property-tax system that would recognize the value of conservation lands. —***Tom Hill***

A Perennial Plan to Pave Paradise

BURR TRAIL, UTAH

CONTROVERSY over plans to pave the Burr Trail, a dirt road in southern Utah, has become a familiar topic in the halls of Congress, the offices of the National Park Service, and the Utah state legislature. Conditioned by numerous battles, Utah conservationists almost ritually rise to the trail's defense.

Why all this commotion over an old dirt road in the middle of nowhere? The road passes through some of southern Utah's most beautiful wild country. From the town of Boulder the Burr Trail winds its way 66 miles southeast to Bullfrog Marina on Lake Powell. Along the way it crosses the Escalante–Circle Cliffs area, Capitol Reef National Park, and the Glen Canyon National Recreation Area. It also forms the border for five roadless areas, including three Bureau of Land Management wilderness study areas.

Originally a stock trail, the road was widened in the 1960s for uranium transport. Since then it has been used year round by hikers, backpackers, and photographers to reach the area's spectacular canyons, and by adventurous tourists looking for a scenic backcountry drive on a good-quality dirt road. Burr Trail is impassable to passenger cars only after heavy rains—perhaps five to ten days a year.

In 1983 Utah Senator Jake Garn (R) tried to transfer $600,000 from the National Park Service to the state of Utah to study the feasibility of a Burr Trail highway. After intensive lobbying by Utah environmentalists and their contacts in Washington, Garn's bill was killed in a House-Senate conference committee.

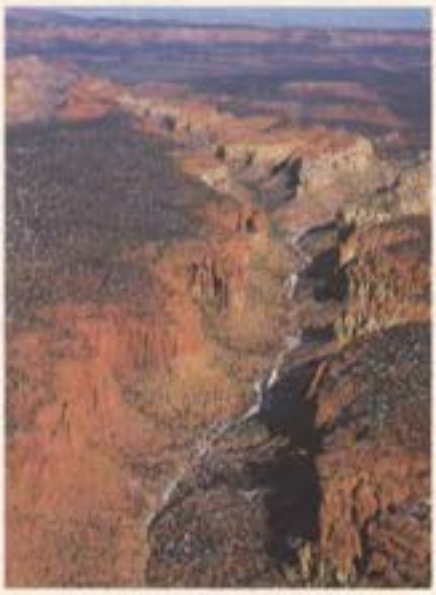
In March 1984 the Utah legislature appropriated $609,000 for a Burr Trail engineering contract, contingent on an

$8.5-million appropriation for the highway from Congress. Once again, Utah conservationists fought hard at the federal level, and eventually helped kill the appropriation.

In 1985 Congress approved an $8.1-million appropriation for Burr Trail improvements, but Rep. Sidney Yates (D-Ill.) insisted that it be made contingent on authorizing legislation, which has not yet been introduced. While conservationists were working for the Yates reprieve, they helped defeat a $5-million paving plan in the Utah legislature.

Last May the National Park Service issued a 74-page environmental assessment that examined various options for the Burr Trail. The agency held hearings in three towns in southern Utah, but not in the populous northern part of the state. Local environmental groups organized a "citizens' hearing" attended by more than 200 people. A court reporter hired by the Sierra Club made a transcript of the meeting, and copies were sent to the Park Service and appropriate congressional representatives.

Subsequently, Park Service Director William P. Mott devised a $15.5-million compromise plan that recommends paving 12 to 16 miles of the road, graveling the rest, and designating it a rural scenic parkway managed by the Park Service. While Mott has rejected some of the grandiose paving schemes of the past, his proposal is unacceptable to conservation groups because it would increase traffic on the road, invite more off-road vehicle use, and require blasting cliffs and diverting streams along some of the most scenic and environmentally sensitive portions of the road. Mott's plan is now on hold, awaiting funding from Congress.



The Burr Trail winds its way through some of southern Utah's finest canyon country.

The alternative supported by the Sierra Club calls for one bridge, concrete dips in major stream crossings, and graveling clay portions of the road. The total estimated cost of these measures, which would make the Burr Trail an all-weather road, is around $7 million, or $30 million less than the cost of paving the entire road.

The Utah legislature has recently passed a bill that appropriates $1.7 million in state funds to improve the road, putting Utah conservationists to work trying to ensure that state funds will be spent on the least-damaging improvements. Conservationists are also keeping an eye on Congress, ready to mobilize again should yet another attempt be made to provide federal funding for unnecessary development on the wild and scenic Burr Trail.

—Ruth Frear

Citizens Turn In Wetland Outlaws

FAIRFIELD, NEW JERSEY

ONE AFTERNOON last fall, a young couple strolled into a housing development under construction in a wetland of the Passaic River Basin in Fairfield, N.J., and inquired about buying a home. After talking prices, financing, and the like, they asked the salesman about flooding, the Passaic River being notorious in this regard.

"Don't worry," said the agent, "we put six feet of fill over this site. These houses are safely above floodline."

The next thing the developer knew, he had been issued a cease and desist order by the New Jersey Department of Environmental Protection (DEP) and

was facing the prospect of tearing down five nearly complete houses and removing some 180,000 cubic yards of fill from the 20-acre wetland site.

The developer, Khubani Enterprises, had become the latest casualty in a fast-growing operation known as the Flood Plain Watch, a project of the 15-year-old Passaic River Coalition. The couple who visited the development were volunteer monitors. For them, masquerading as newlyweds in search of a first dream house is all in a day's work.

Launched last October, the project has attracted more than 200 volunteers to monitor the Passaic River Basin, and monitors have filed more than 30 violation reports with the DEP's Bureau of Flood Plain Management. Project coordinator David Epstein expects the force to number 500 before long.

"It's not that New Jersey doesn't have strong regulations," Epstein says. "After the devastating flood of 1984, the state adopted admirable regulations. The problem is that until now they haven't been enforced."

The numbers bear him out. Building developments on wetlands require permits from the DEP, the U.S. Army Corps of Engineers, and local jurisdictions. The DEP has issued many permits, but these only become valid after also receiving a permit from the Corps, which has issued only a handful of permits during the past three years. Many operations have proceeded illegally, causing the state's wetlands to disappear at an accelerating rate.

Jane Gallone

New Jersey wetlands like this one in Morris Township are being filled and developed, often without the required federal permits.

Wetlands are vital to New Jersey, the nation's most densely populated state. They provide floodwater storage capacity, wildlife habitat, water purification, and replenish groundwater supplies. "Wetlands are essential components of the ecosystem and must be preserved in the public interest," says James M. Mansky, chief of the Corps' regulatory branch in New York.

The idea for the Flood Plain Watch came from the Passaic River Coalition's executive administrator, Ella Filippone, who received so many complaints from residents that she decided to create a volunteer environmental police force.

The New Jersey DEP welcomes the work of the Flood Plain Watchers. As Bureau of Flood Plain Management Chief Lance Miller says, "It's an exciting project. There are a lot of enthusiastic and energetic people out there, and it's helpful to have complaints screened before they come to us. We're looking forward to a productive relationship."

—Tom Turner

SIERRA NOTES

Sierra Club Books has some outdoor and vacation ideas to offer this season. For the adventurous: *Hiking the Grand Canyon* by John Annerino ($10.95, $9.85 for Sierra Club members); *The Sierra Club Guide to the Natural Areas of New Mexico, Arizona, and Nevada* by John Perry and Jane Greverus Perry ($10.95, $9.85); *Adventuring in the Rockies: The Sierra Club Travel Guide to the Rocky Mountain Regions of the United States and Canada* by Jeremy Schmidt ($10.95, $9.85); and *Canoeing Ontario's Rivers: Great Canoe Trips in Canada's Northern Wilderness* by Ron Reid and Janet Grand ($10.95, $9.85).

Issue-oriented books published this spring include *Sustainable Communities: A New Design Synthesis for Cities, Suburbs, and Towns* by Sim Van der Ryn and Peter Calthorpe ($25, $22.50); *Suncell: Energy, Economy, and Photovoltaics* by Christopher C. Swan ($17.95, $16.15); and *The Social and Environmental Effects of Large Dams* by Edward Goldsmith and Nicholas Hildyard ($29.95, $26.95).

These and other books may be ordered through the Sierra Club Catalog. Nonmembers may order *books only* from Sierra Club Store Orders, 730 Polk St., San Francisco, CA 94109; phone (415) 776-2211. Include $2.50 postage and handling for orders up to $20, and $4.50 for orders over $20. Allow four weeks for delivery.

The Toiyabe Chapter of the Sierra Club invites members from neighboring states to explore national forest areas being considered for wilderness designation. Contact Toiyabe Chapter Wilderness Outings, P.O. Box 8096, Reno, NV 89507.

The University of Alaska–Fairbanks offers six summer-study trips into the outreaches of the 49th state from mid-June to late August. Participants will canoe, hike, camp, and explore areas in Katmai National Park, the Alaska Range, Gates of the Arctic National Park, the remote Noatak River, and the northern Brooks Range foothills. Gary Snyder, David Brower, and scientists with decades of Alaskan experience are slated as instructors.

Contact Conferences and Continuing Education, University of Alaska–Fairbanks, Fairbanks, AK 99775 for more information.

The Tenth North American Prairie Conference will bring scientists, conservationists, folklorists, and philosophers together in Denton, Texas, June 22 to 26. Speakers, symposia, workshops, and entertainment will reflect the conference theme, "The Prairie: Roots of Our Culture, Foundation of Our Economy."

For further information write Prairie Conference, Texas Woman's University (P.O. Box 22675, Denton, TX 76204); or phone Madge Gatlin, (214) 644-0778.

The Quercus Fund, managed by a committee of five Sierra Club members from Southern California, will administer $700,000 that resulted from an out-of-court settlement between the Sierra Club and the developer of a 150-acre housing project in the Santa Monica Mountains. The development, which threatened homes below with mudslides and would have removed 112 venerable oak trees as well as the historic Summit-to-Summit Trail, came to the attention of the Sierra Club's Santa Monica Mountains Task Force in 1978.

A lawsuit filed in 1980 on behalf of the Club by Carlyle Hall of the Center for Law in the Public Interest (CLIPI) resulted in a modification of the plan to soften the impacts of development, along with an unusual offer by the developer to transfer funds to the Sierra Club to acquire more land for the Santa Monica Mountains National Recreation Area.

The $700,000 was turned over to CLIPI early this year. The Sierra Club members appointed to administer the fund will use the money to place options on properties for possible inclusion in the Santa Monica Mountains NRA, especially in the important Topanga Canyon watershed. Some money may also be used for outright purchases.

OPEN-TRIP LIST

It's not too late to sign up for a 1986 Outing. There is still space available on a large number of 1986 Sierra Club Outings. If you act promptly, you can probably find space on any of the trips listed below. If a trip is not listed below, check with the Outing Department—vacancies may have occurred. Please see the January/February issue of *Sierra* for reservation and cancellation information and an application form. Make sure you read the reservation and cancellation policy carefully before applying. To order supplemental information on any of our 1986 Outings, send in the coupon on page 79. A listing of 1987 Foreign Trips will be published in the July/August issue.

Please note: *Unfortunately, most of the rafting trips announced in the January/February issue have been cancelled due to the lack of available liability insurance—a direct consequence of the current turmoil in the insurance industry. We will once again offer raft trips to our members when the necessary liability insurance becomes available.*

Backpack Rating Key: L = Leisure Trip; M = Moderate Trip; S = Strenuous Trip

Trip Number	E = Educational Outing; • = Leader approval required	Date	Rating	Trip Fee (including Deposit)	Deposit	Leader
Backpack Trips	(See Foreign Trips for other Backpack outings.)					
78	•Gila Wilderness High Country, NM	June 15-21	L-M	250	35	Richard Taylor
82	•"Cloudland," Cherokee and Pisgah Forests, TN/NC	June 21-28	M	225	35	Chuck Cotter
83	•Susquehannock State Forest, PA	June 21-29	L	295	35	Erica & Len Frank
85	•Classic Klamath Sampler–Salmon-Trinity Alps, CA	July 5-13	L	230	35	Jenny Holliday
87	•Rutherford Lake, Ansel Adams Wilderness, Sierra	July 13-20	L-M	205	35	Fred Schlachter
89	•Huckleberry Lake Discovery, Emigrant Wilderness, Sierra	July 14-21	M	205	35	John Bird
91	•Yosemite and Ansel Adams Wilderness, Sierra	July 17-24	M-S	200	35	H. Drossman
93	•Lake George Backpack, NY	July 20-26	L	285	35	Bob Dolson
97	•Trinity Alps, Mines and Lakes, CA	July 19-26	L-M	185	35	Jean Ridone
98	•Indian Lakes Peakbagging, John Muir Wilderness, Sierra	July 25-Aug. 2	M	210	35	Vicky Hoover
104	•High Mountain Basins, John Muir Wilderness, Sierra	Aug. 1-10	L-M	220	35	Diane Cook
106	•Gemini Loop, John Muir Wilderness, Sierra	Aug. 2-10	M-S	210	35	L. & G. Young
107	•New Fork Lakes Leisure Loop, Bridger Wilderness, WY	Aug. 2-11	L	295	35	Dave Bennie
108	•Hunter–Fryingpan Wilderness, CO	Aug. 3-9	M	295	35	Fred Gunckel
110	•Triple Divide Peak, Southern Yosemite, Sierra	Aug. 4-12	L	240	35	L. & W. Goggin
111	•Sixty Lake Loop, Kings Canyon Park, Sierra	Aug. 5-14	L-M	280	35	Bill Walsh
112	•Pacific Crest Trail, Sierra Forest, Sierra	Aug. 9-17	M-S	205	35	Jim Carson
113	•Miter Basin, John Muir Wilderness/Sequoia Park, Sierra	Aug. 10-17	M	215	35	Jim Gilbreath
115	•Silver Divide, John Muir Wilderness, Sierra	Aug. 10-17	M	205	35	Andy Johnson
117	•Mineral King Lakes, Meadows, and Passes, Sierra	Aug. 13-21	L-M	245	35	Joe Davis
118	•Gardiner Basin, Kings Canyon Park, Sierra	Aug. 13-22	M	235	35	Bill Engs
119	•The Sierra High Route, Yosemite Park, Sierra	Aug. 16-22	M-S	205	35	Carol Shapiro
123	•String of Pearls, Kings Canyon Park, Sierra	Aug. 18-26	M-S	205	35	M. & D. Smith
124	•Middle Fork of the Kings, Kings Canyon Park, Sierra	Aug. 21-30	M	235	35	Gordon Peterson
125	•Milestone Basin, Sequoia–Kings Canyon Parks, Sierra	Aug. 22-31	M-S	245	35	David Reneau
126	•Sequoia Lakes and Canyons, Sequoia Park, Sierra	Aug. 29-Sept. 6	M	205	35	Don Lackowski
127	•Baxter State Park, ME	Aug. 31-Sept. 6	M-S	335	35	Allan Blair
130	•Joe Devel Peak Loop, Inyo Forest, Sierra	Sept. 7-13	M	190	35	Bob Madsen
131	•Medley Lake, John Muir Wilderness, Sierra	Sept. 13-21	M	225	35	Paul Cavagnolo
132	•Adirondack Fall Colors, NY	Sept. 21-26	M-S	295	35	C. Caldwell & J. Blauner
300	•Capitol Reef, UT	Sept. 27-Oct. 4	M	235	35	L. Krause & S. Groth
301	•Gila Wilderness, NM	Sept. 28-Oct. 4	M	235	35	George Mader
303	•Picacho del Diablo, Sierra San Pedro Martir, Baja	Oct. 11-18	S	335	35	Bob Hartman

Backpack Rating Key: L = Leisure Trip, M = Moderate Trip, S = Strenuous Trip

Trip Number — E = Educational Outing, • = Leader approval required

Trip Number		Date	Rating	Trip Fee (including Deposit)	Deposit	Leader
Junior Backpack Trip						
135	•Tablelands, Sequoia Park, Sierra	Aug. 16-22	M	190	35	Ellen Howard
Base Camp Trips	(See Family, Foreign, Hawaii, and Water Trips for other Base Camp outings.)					
137	Canyonlands-Colorado Plateau, AZ	May 17-26		395	35	Bob Marley
140	Rogue River Wilderness Lodges, OR	July 5-10		635	70	c/o Bill Gifford
146-E	Donner-Tahoe Exploration, Sierra	Aug. 2-9		375	35	M. Broussard
147	Rangeley Lakes, ME	Aug. 2-9		295	35	Bob Holcomb
149	Rogue River Wilderness Lodges, OR	Aug. 3-8		635	70	c/o Bill Gifford
150-E	Historical Meadow Lake, Tahoe Forest, Sierra	Aug. 10-16		240	35	Serge Puchert
151	Stehekin Valley, North Cascades, WA	Aug. 17-23		660	70	Bill Gifford
152	Canyon de Chelly, AZ	Aug. 22-29		385	35	C. & T. Baker
155	Rogue River Wilderness Lodges, OR	Sept. 13-18		635	70	c/o Bill Gifford
306	Everglades Park, FL	Dec. 26-31		300	35	Vivian & Otto Spielbichler
Bicycle Trips	(See Family and Foreign Trips for other Bicycle outings.)					
158	•Chesapeake Bay Bicycle Tour, Eastern Shore, MD	June 8-14		275	35	John Arthur
160	•East-West Wisconsin Bicycle Tour	July 12-19		265	35	Alice Van Deburg
161	•Seattle to the San Juans Bicycle Tour, WA	July 13-20		325	35	B. Lande & G. Voss
163	•Acadia Park/Mt. Desert Island Bike and Hike, ME	Aug. 10-16		295	35	Edith Schell
164	•Finger Lakes "Grand Tour," NY	Sept. 7-13		270	35	John L. Kolp
Burro Trips						
168	•Grand Canyon of the Tuolumne, Sierra	Aug. 16-23		370	35	Don White
Family Trips	(See Burro, Base Camp, and Raft Trips suitable for other Family outings.)					
				Two Parents and one child / One Parent and one child / Each addl. child		
FAMILY CANOE TRIPS						
174	•Main Eel Family Trip, CA	June 15-21		760 / 495 / 200	35	Jenny Dienger
175	•Restigouche River Exploration, Quebec	July 12-20		1440 / 920 / 360	35	W. & T. Roy
FAMILY BIKE TRIP						
176	•Door County, WI	Aug. 10-16		645 / 430 / 175	35	John Arthur
Foreign Trips						
695	•Annapurna Circle Trek, Nepal	June 7-July 7		1130	100	Peter Owens
715	The Mountains of Portugal for Walking and Hiking	May 25-June 14		1880	100	M. & T. Look
725	Turkey: A Classic Overview	June 18-July 11		2075	100	Ray Des Camp
735B	Tanzania Wildlife Safari: Zanzibar to Serengeti	June 26-July 10		1995	100	Ruth Dyche
745	Bolivia—Quiet Jewel of the Andes	June 22-July 13		1795	100	Charles Schultz
750	The Unknown Pyrenees, Spain	June 29-July 12		1120	100	John Doering
755	•Photographing the Alps	June 29-July 14		1995	100	Dolph Amster
760	France: The Southwest	June 30-July 11		1715	100	Lynne Simpson
770	Slovenian Alps, Yugoslavia	July 13-26		960	100	Fred Gooding
775	Basqueland Adventure, France and Spain	July 14-27		1270	100	Nancy Auker
790	•Wilderness and Culture of the Great Manchurian Basin, China	July 27-Aug. 17		2395	100	Jack Holmes
805	Cycling the French Lake and Spa Region, France	July 22-31		1695	100	Richard Weiss
810	•Mountain Hiking in Swedish Lappland	Aug. 21-Sept. 5		1790	100	Bob Paul
815	•Hiking in the Austrian Alps: Vorarlberg and Tirol	Sept. 11-20		995	100	Ann Hildebrand
825	•Trekking in the Dragon Kingdom, Bhutan	Sept. 27-Oct. 25		3000	100	J. & J. Edginton
835	Oktoberfest in the Rhineland, West Germany	Oct. 1-11		1180	100	Bud Bollock
860	•Rolwaling Valley, Nepal	Nov. 15-Dec. 6		1280	100	Patrick Colgan
865	•Annapurna Christmas, Nepal	Dec. 20-Jan. 3		785	100	Peter Owens
870	Bicycling in New Zealand	Dec. 21-Jan. 5		1060	100	B. & P. Tamm
875	Bicycling in New Zealand	Jan. 5-17		970	100	B. & P. Tamm
880	Cross-Country Skiing in the Austrian and Swiss Alps	Jan. 24-Feb. 8		1450	100	Carol Dienger
890	Kenya Wildlife Walking Safari, Africa	Feb. 1-20		2565	100	Emily Benner
895	•Ski Touring in Norway	Feb. 24-March 13		TBA	100	Bob Paul
Hawaii Trips						
180	•Big Island Coasts Backpack	Sept. 8-19		540	70	George Winsley
308	Christmas on Hawaii, Volcanoes and the Sun	Dec. 20-Jan 1		855	70	Judy Nelson

Trip Number	E = Educational Outing • = Leader approval required	Date	Trip Fee (including Deposit)	Deposit	Leader
Highlight Trips	(See Alaska and Base Camp Trips for other Highlight-type outings.)				
182	Navajo Rims and Canyons, Navajo Reservation, AZ	June 1-9	585	70	Don Lyngholm
183	Kalmiopsis Llama Trek, Siskiyou Forest, OR	June 15-20	535	70	Marilyn Gifford
184	Ruby Mountains, Humboldt Forest, NV	July 26-Aug. 2	540	70	Serge Puchert
188	Humphreys Basin, Sierra	Aug. 22-Sept. 1	785	70	Bob Miller
189	Uinta Crest, Ashley Forest, UT	Aug. 11-19	755	70	Jerry Clegg
190	Indian Heaven Wilderness Llama Trek, WA	Sept. 14-19	535	70	Bill Gifford
310	Mojave Desert Special, CA	Jan. 11-17	290	35	Dolph Amster
Service Trips					
TRAIL MAINTENANCE PROJECTS					
193	•Rose River Loop, Shenandoah Park, VA	June 1-7	100	35	Paul Torrence
194	•Blue Range Primitive Area, Apache Forest, AZ	June 7-14	100	35	Rod Ricker
195	•Elk Creek, Marble Mountain Wilderness, CA	June 16-26	100	35	Jack Brautigam
200	•One-Mile Lake Trail Maintenance, Marble Mountain Wilderness, CA	July 7-17	100	35	John Albrecht
201	•Hamilton Camp Women's Trip, Marble Mountain Wilderness, CA	July 16-26	100	35	Diane Jackson
204	•Targhee Tetons Trail Maintenance Project, ID	July 21-31	100	35	Bob Wolf
205	•Pine Creek, Inyo Forest, Sierra	Aug. 1-11	100	35	Scott Larson
207	•Cloud Peak Wilderness, Big Horn Forest, WY	Aug. 5-15	100	35	John Albrecht
208	•Washakie Wilderness, Greybull River, WY	Aug. 5-15	100	35	Edwin Thomas
209	•Sierra Club's Own Trail Construction Project #2, Sierra Forest, Sierra	Aug. 9-17	100	35	Vince White-Petteruti
210	•Long Mountain Lake, Panhandle Forest, ID	Aug. 10-20	100	35	Bob Hayes
213	•Baxter Park Canoe and Bog-Bridging, ME	Aug. 17-24	110	35	Terry Koch
214	•Vogelsang Trail Maintenance and Roving Cleanup, Yosemite Park, Sierra	Aug. 17-28	100	35	C. E. Vollum
215	•Bowman Trail Maintenance Project, Eagle Cap Wilderness, OR	Aug. 21-31	100	35	Cathie Pake
216	•Mt. Hood Timberline Trail Maintenance, Cascade Range, OR	Aug. 24-Sept. 3	100	35	Rick Zenn
217	•Grand Canyon, Kaibab Forest, AZ	Aug. 28-Sept. 6	100	35	Peter Curia
220	•Tuolumne Meadows Base Camp, Yosemite Park, Sierra	Sept. 7-17	100	35	Kevin Havlik
313	•Ozark Trail Building, MO	Oct. 19-25	100	35	Rick Rice
Water Trips					
CANOE TRIPS	(See Alaska, Family, and Service Trips for other Canoe outings.)				
248	•Main Eel For Beginners, CA	June 2-7	295	35	Charlie Doyle
249	•Current River, MO	June 4-10	240	35	c/o Faye Sitzman
251	•Trinity River Touring, CA	July 14-19	295	35	Hanna Ruthlin
252	•Trinity/Klamath Whitewater, CA	July 21-26	325	35	M. & B. Bricca
253	•Boundary Waters Voyageur Canoe, MN	July 29-Aug. 9	495	35	Tom Sitzman
254	•Yukon/Teslin Rivers, Yukon Territory, Canada	July 29-Aug. 12	1015	70	Iila & Chuck Wild
SAILING TRIPS	(See Foreign Trips for other Sailing outings.)				
258-E	Totems, Sails, and Killer Whales—B.C.	July 15-24	1395	70	John Garcia
259	San Juan–Gulf Islands Orca Sailing Adventure, B.C.	Sept. 7-12	795	70	Victor Monke

For More Details on Outings

Outings are described more fully in trip supplements, which are available from the Outing Department. Trips vary in size, cost, and the physical stamina and experience required. New members may have difficulty judging which trip is best suited to their own abilities and interests. Don't sign up for the wrong one! Ask for the trip supplement before you make your reservations, saving yourself the cost and inconvenience of changing or cancelling a reservation. The first three supplements are free. Please enclose 50 cents apiece for extras. Write or phone the trip leader if any further questions remain.

Clip coupon and mail to:

Sierra Club Outing Department
730 Polk St., San Francisco, CA 94109

Sierra Club Member ____ Yes ____ No

Send supplements:

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NAME_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

Enclosed is $____ for extra supplements at 50 cents each. Please allow 2-4 weeks for delivery. **Please do not mail cash.**

BOOKS

Enemies on Every Side

Are You Tough Enough?
by Anne M. Burford, with John Greenya
McGraw-Hill, 1986. $16.95, cloth.

Larry Anderson

WHEN Ronald Reagan's first EPA administrator was ordered by the Justice Department to turn over to Congress subpoenaed papers relating to the Superfund program, she refused. Anne Burford thus became the highest-ranking executive-branch official in history to be held in contempt of Congress. Burford is out to settle a few scores in this account of her 22 months as head of the EPA, where she soon found herself "the increasingly lonely buffer between an angry Congress, an entrenched and secretive senior White House staff, and the Department of Justice."

The list of those she charges with some combination of duplicity, incompetence, malice, or ignorance is a long one, and includes some strange bedfellows. Environmentalists and "a hostile, confrontational press," it goes without saying, head the roll. But Burford also targets the Carter administration and its "anti-industry and anti-business" holdovers on the EPA staff; "King David" Stockman and his imperious underlings at the Office of Management and Budget; Rita Lavelle, head of the EPA Toxic Waste Office and the Superfund program; the Justice Department, including former Attorney General William French Smith; patronizing, devious White House aides who were continually "putting sand in the engine of our efforts"; White House counsel Fred Fielding ("hardly a Reaganite"); Canadian officials ("the biggest bunch of overbearing bastards I'd ever had the misfortune to deal with"); and even "high-profile conservatives" like her former political supporter, Colorado brewing heir and Reagan friend Joseph Coors, who told Burford the White House wanted her resignation.

Burford's version of administration attempts to undermine the statutory duties and objectives of the EPA has received some support from subsequent events. A recent report prepared by the House Judiciary Committee, for instance, recommended the appointment of a special prosecutor to investigate whether the Justice Department concealed information from Congress during the 1983 investigation of the EPA and its Superfund program.

The double-crossing and exploitation of Anne Burford that was part and parcel of the administration's attempt to defend the doctrine of executive privilege was, to Burford, the most costly example of such dirty work. Perhaps the most telling anecdote concerning the administration's genuine environmental aims, however, was one she heard in 1985 from John Hernandez, her deputy administrator, who had also been considered for the agency's top job. According to Hernandez, Fred Khedouri, one of Stockman's deputies, asked him during an interview, "Would you be willing to bring EPA to its knees?"

Another White House tactic used to undermine the EPA, by Burford's account, was foisting on the agency political appointees who took their orders from the White House without her knowledge. Burford believes Rita Lavelle was in effect a White House mole, reporting directly to presidential aide Craig Fuller. Burford fired Lavelle upon learning that she had written an internal memorandum criticizing the agency's enforcement arm for "alienating . . . the primary constituency of this administration, big business"—and then lied about having written it.

On the weekend after being fired, according to a congressional report, Lavelle removed from her office reams of files that might have shed some light on the degree to which political considerations affected administration of the Superfund program. Lavelle's subsequent perjury conviction resulted from lies she told Burford and Congress about the

timing and extent of her involvement with her former employer during her tenure at the EPA.

Burford still expresses a lukewarm faith in her "personal and political hero," Ronald Reagan, but she concludes that the President and his administration are not friends of the environment after all. "Frankly," she writes, "it appears obvious to me that the President and his close advisors are simply ignoring the Environmental Protection Agency and its many mandates." She was apparently among the last to know what the administration's environmental policies were. She and the EPA, by her own rueful admission, have been victims of Reagan's "special brand of benevolent neglect, a form of conveniently looking the other way while his staff continues to do some very dirty work."

But despite the evidence she provides of bungling and dissembling by those out to undermine the agency, Burford was in large measure the victim of her own innocence. One observer who saw it all notes in *Are You Tough Enough?* that "she didn't really understand the rough-and-tumble of Washington life. . . . [You] come into Washington, and though you may believe very strongly in your principles, and believe very strongly that you're doing the right thing, you have to be very careful because they will denude you in one minute."

LARRY ANDERSON *is a writer from Little Compton, R.I.*

Flawed Look at a Western Crisis

Wild Horses and Sacred Cows
by Richard Symanski
Northland Press, 1985.
$14.95, cloth; $9.95, softcover.

Johanna Wald

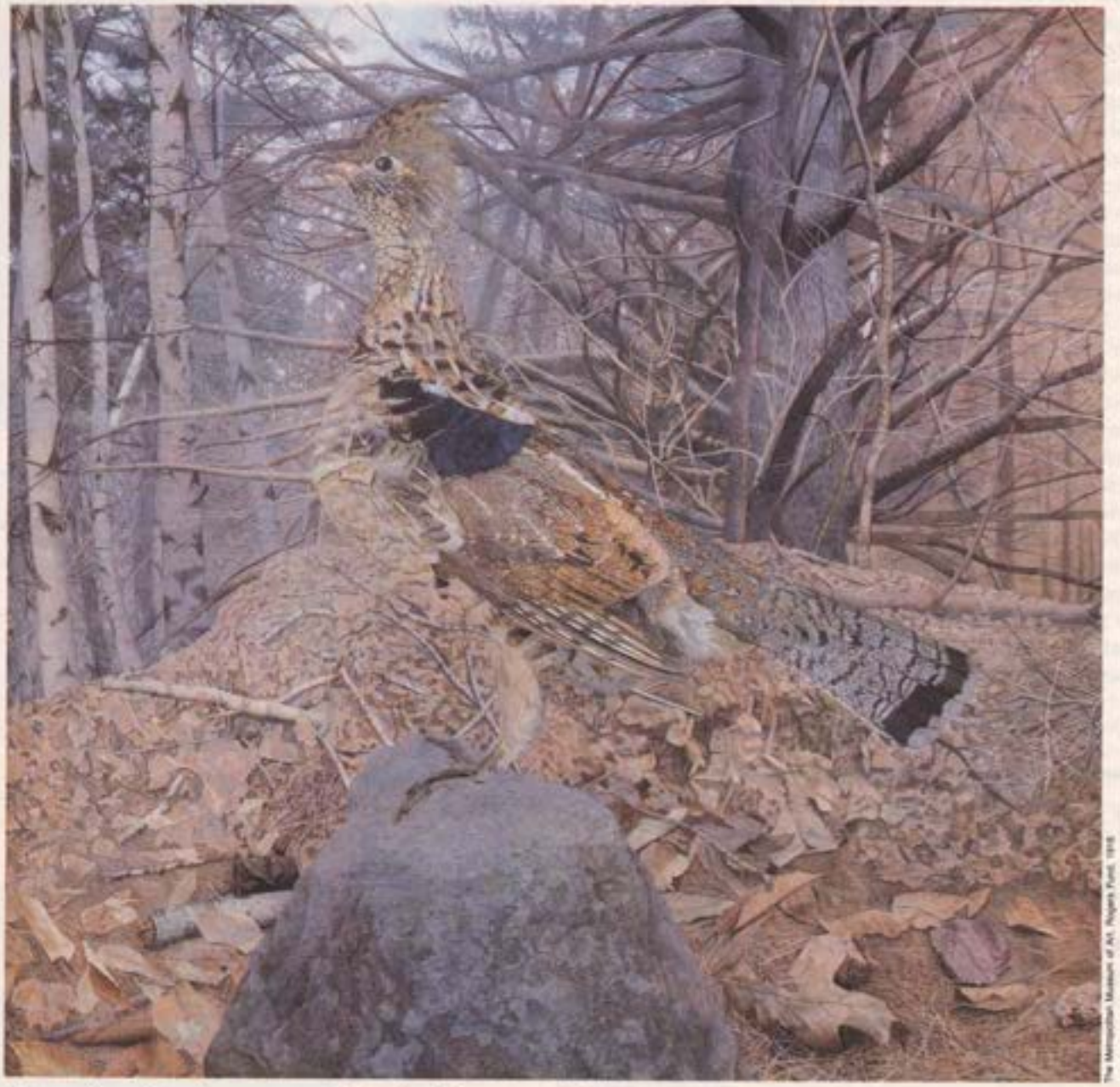
BECAUSE WILD HORSES inhabit only a tiny fraction of public rangelands, they have received little attention in the current debate over management of those lands. But the wild horse issue is a highly emotional and complex one nonetheless,

particularly in Nevada, where most of the nation's wild horses live.

Two questions lie at the heart of the matter: How many wild horses should inhabit public lands, and what should be done with those that are removed? Because conservationists are divided over the issue, a balanced, objective analysis of these questions could contribute meaningfully to their resolution. Unfortunately, *Wild Horses and Sacred Cows* does little to clarify the problem.

Most public rangelands are under the jurisdiction of the Bureau of Land Management. Historically the agency has managed the public lands to benefit livestock operators who graze their cattle and sheep on them. The result has been serious and extensive degradation of wildlife, soils, vegetation, water, and other land resources. Wild horses have also suffered: Huge numbers of them have been rounded up and removed from the public lands, chiefly by live-

AT A GLANCE



Metropolitan Zoo
Text by Joseph Bell
Design by Alvin Grossman
Metropolitan Museum of Art/
Harry N. Abrams, 1985
$24.95, cloth.

Artists both famous and obscure have used a variety of media—sculpture, sketches, paintings, masks, engraved shields, drinking vessels, porcelain—to depict all manner of exotic and mundane animals throughout history. *Metropolitan Zoo* is a stunning sampler of their work from the collection of the Metropolitan Museum of Art. This 1909 portrait of a ruffed grouse is by watercolorist Gerald M. Thayer, reproduced from his book *Concealing-Coloration in the Animal Kingdom*.

stock operators and other private parties. Until 1971, captured animals were commonly shot and sold for dog food.

In 1971 Congress passed the Wild, Free-Roaming Horses and Burros Act to prevent the "senseless slaughter" and sale of wild horses. The law permits removal of wild horses only from "overpopulated" areas, and requires the BLM to manage horses as integral components of the public lands. The agency is also required (by the Federal Land Policy and Management Act) to manage public lands according to the principles of multiple use and sustained yield. The current debate over public lands in general and horses in particular relates to management plans the BLM is preparing, ostensibly in response to these laws.

The agency's plans call for major increases in livestock numbers, although its own documents reveal that cattle and sheep are already the overwhelmingly dominant consumers of limited public forage supplies. In areas where wild horses roam (chiefly in parts of Oregon, California, Montana, and Nevada), BLM plans call for drastic reductions in their numbers. Because horses compete with cattle for forage, this is sure to make livestock operators even happier.

Needless to say, these plans distress those who love wild horses as well as those who advocate environmentally responsible management of public lands. So far, politically powerful horse-lovers have successfully opposed legislation that would facilitate the proposed reductions by permitting animals not placed through the Adopt-a-Horse program to be sold to the highest bidder.

Symanski introduces the reader to some of the people involved in the controversy. The cast of characters includes people whose perspectives differ dramatically: operators whose livestock share the public lands with not only wild horses but also deer, antelope, and other wildlife; BLM employees; wild horse advocates; and environmentalists, represented primarily by two Sierra Club activists in Nevada.

Although the author introduces himself as an unbiased and disinterested observer, his sympathies and prejudices are clear from the start. Horse-lovers and potential adopters are "naive," "would-be humanitarians" and sentimentalists—

whereas BLM employees who favor removing horses are "thoughtful" and "astute." Environmentalists who want to use the issue of wild horses to reduce livestock numbers on overgrazed lands are "opinionated" and "uncompromising." The environmental impacts of wild horse grazing are stressed, while those caused by livestock go virtually unmentioned. "Ranching is part of [a] wholesome myth," Symanski asserts, but those who oppose the sale of wild horses for pet food merely reflect a cultural prejudice.

Symanski not only lacks the skill to bring the people he portrays to life; he also seems to lack the ability or desire to present their opinions accurately—particularly the opinions of those who do not share his position. Thus, his description of Rose Strickland, former chair of the Sierra Club's Public Lands Committee, is woefully incomplete. Far from being the simplistic, single-minded advocate of arbitrary livestock reductions that he portrays, Strickland believes the use of public lands by both livestock and horses must be within the carrying capacity of the range. Her bottom line—that BLM proposals to reduce the number of horses and increase the number of cows on abused and overgrazed ranges are neither fair nor environmentally responsible—seems to have escaped Symanski's notice.

Many other errors and flaws confirm both the author's bias and the superficial nature of his "investigation." In particular, he presents as valid the livestock industry's opinion that the Wild Horse and Burro Act requires the BLM to reduce horse numbers to their 1971 level. Indeed, this belief constitutes both the fundamental premise of his book and his solution to the problem. The fact is that the industry's interpretation has already been rejected by the courts.

Although Symanski grudgingly admits at the end of his book that there are too many cows on the public lands as well as too many wild horses, he predictably proffers the solution long advocated by the livestock industry: postpone indefinitely all efforts to eliminate overgrazing by livestock; reduce horse numbers to the 1971 level as quickly as possible; and grant the BLM authority to sell unadoptable animals that have been removed from the public ranges. But his efforts to portray this solution as eminently reasonable and consistent with the notion of multiple use are illogical, and ignore the real cause of our public land problems. Few environmentalists are likely to be persuaded.

Johanna Wald is a senior staff attorney with the Natural Resources Defense Council in San Francisco.

Riches Beyond the City Walls

God's Fool
by Julien Green
Harper and Row, 1985. $16.95, cloth.

Peter Wild

"Brother Wolf, come here." Though the beginnings of movements tend to be elusive, one can suggest with some confidence that these words echo the onset of environmentalism.

Who spoke them? John Muir comes to mind. Yet as tender as John-o'-Mountains could be toward the natural world in which he reveled, it's a bit difficult to imagine the practical Scot addressing a wolf in quite these terms. Thoreau? A good guess—but no wolves prowled the tamed woods of Concord.

Somewhat to our surprise, we have to go much further back than the 19th century to discover environmentalism's roots. As far back as the 13th century, in fact. The scene is Italy. Savaging the countryside, a great wolf has the residents of Gubbio trembling behind their locked doors. While the townspeople moan over the slaughter to be, St. Francis strides out into the wilderness. "Brother Wolf, come here," he gently commands. The wolf fawns toward him and, wagging his tail, marches back to the city behind the saint to become Gubbio's famed official pet.

Myth or miracle, call it what you will. (Though we should note in passing that the author of this biography, while retaining a certain skepticism toward the visionary excesses of the medieval age, leans toward the latter interpretation.) We need not espouse any particular religious beliefs to see the historical significance of St. Francis of Assisi. Before his day most people feared nature as that threatening chaos lying beyond city walls. The stark dichotomy of this world view comes down to us in the roots of two basic words: "city," derived from the Latin term for citizen or state, and "country," which meant everything outside the protecting walls—all those wild thickets full of snapping wolves, devils, and other chromatic horrors of the human imagination.

The charming tale of the Wolf of Gubbio shows how one man began the long process of bringing these two opposing concepts together, not just literally but also in the realization that people should learn to respect the virtues of wildness. For it shouldn't be supposed that the wolf story—the best known anecdote about the saint—is the end of the matter. Typically, St. Francis was no tamer of nature, no bender of wilderness to fit the forms of civilization. On the contrary: Taking cringing city dwellers by the hand, he led them beyond their walls to where the birds flew and ani-

mals gathered around and—so it is said—spoke with him.

In our modern campaigns to protect wilderness and endangered species, this process continues. Putting heart-tugging ancient stories aside for the moment, isn't this what nature-lovers from William Penn to William Bartram, from Thoreau to Muir, have done through the ages? They helped bring the civilized and natural worlds together, showing a crabbed humanity that new riches lay beyond the sheltering walls. So Muir yearned to "touch the living rock" of the Sierra and dip his head "in high mountain air." With this modern difference: Today we realize that appreciation of nature goes far beyond the emotional and spiritual benefits. It involves our very survival. And as with environmentalists today, St. Francis occasionally took his knocks for his radical views, whence the book's apt title.

There's much more to this biography than environmental history. The spoiled son of a wealthy cloth merchant, St. Francis in his youth loved nothing more than to lead his fellows-in-pleasure on uproarious excursions of singing and dancing through the midnight streets, against the backdrop of hot-blooded assassinations, conspiracies, and fantastic flights of public fancy that made up the welter of his times.

Was the Wolf of Gubbio simply one more of those flights of fancy? Perhaps. In the history of ideas, mere journalistic fact isn't the point. Yet some readers may be comforted by the knowledge that in 1873 workmen at a construction site in Gubbio were amazed to dig up the skull of a huge wolf.

PETER WILD, *a professor of English at the University of Arizona and a frequent contributor to* Sierra, *was among those we polled in preparing* Leaves of Green *(page 56).*

Here Comes the Neighborhood

The Wildlife Gardener
by John V. Dennis
Knopf, 1985; $17.95, cloth.

Patti Hagan

THIS SELF-HELPFUL BOOK explains how to make your immediate surroundings more interesting to you by making them more interesting to wild things. By planting what would have grown naturally, you can have it all: birds, bees, bugs, reptiles, worms, and mammals.

Biologist and wildlife entertainer John Dennis admits to receiving great satisfaction from playing host to as large a share of the wildlife community as the resources of his yard will permit. The aim of this wildlife bon vivant is "to help wildlife during a time when so many forms are losing their natural habitat and are being exposed to the hazards of pesticides and other kinds of pollution." Dennis gardens to allow countless wild creatures to stay close to home—his home.

A wildlife garden is by definition a nonpesticidal outpost, and thus somewhat relaxed. Aware that in many unenlightened municipalities natural landscapers are running afoul of local garden-grooming ordinances—which call for militaristic crewcut lawns de-

flowered of dandelion and hackweed—Dennis describes how to make your yard appealing to both the authorities and your wild constituency.

Dennis takes pains to stress that wildlife gardening is "very much like any other gardening. . . . There is just as much emphasis upon good landscaping and keeping the yard tidy. If there is a difference, it is in the somewhat less manicured look of the wildlife garden. But beauty is always a prime objective." While not exactly anti-lawn, Dennis is for less lawn—preserving just enough for the creature benefits of the well-known "edge effect."

Water may be the big news for neo-wild gardeners. According to Dennis, no other ingredient—and he specifically includes food—is more important in bringing wildlife to the yard: "I can always count on having more bird species over a period of time at my birdbath than at my birdfeeders." In addition to his waterworks, the author does "bird food plantings," with particular emphasis on berry-bearing shrubs that hold their fruit well into winter, such as scarlet firethorn, the hollies, certain viburnums, the privets, coralberry, snowberry, chokeberry, and the highly popular fruits of the red cedar.

Given that most urban and suburban yards have room for only a limited number of trees, Dennis suggests that additional trees be considered primarily from a bird-attracting standpoint. Do they offer food, shelter, or nest sites? All choices should, of course, be made in the context of a manipulative bird-feeding regimen "so as to favor less aggressive birds and native species over introduced ones."

Moving down to lower-level plantings, Dennis introduces you to the "bird flowers"—"predominantly red, tubular in shape, rich in nectar, and odorless," attended mainly by hummers—and the "bee flowers," which generally "flaunt bright colors and a fragrance," not to mention the "butterfly flowers," including zinnias, marigolds, dahlias, asters, goldenrods, verbena, milkweed, butterfly bush, and lantana. Butterflies, which are extremely color-conscious, tend to favor red, purple, lavender, yellow, orange, and white. Since butterflies are not exactly free these days—few groups, Dennis notes, have suffered more from pesticides—you have to work to get them in your yard and keep them around.

The Wildlife Gardener also offers some irresistible dietary information. For instance, should you consider your privet shrub too banal for words, Dennis points out that the fruits of the common privet constitute as much as 60 percent of the raccoon's diet in Alabama during the last two months of the year. (The preferences of Yankee raccoons go unremarked.) He has seen gray squirrels drinking sugar water at hummingbird feeders, and suggests that if you had thought of decimating your squirrel population by strategically planting amanita mushrooms—well, red squirrels positively *savor* the deadly fungi.

Dennis practices a generous, "other-directed," wonderfully unselfcentered form of gardening. Some might call it generous to a fault, for he finds something positive—or at least interesting—to say about every potential garden visitor. The mole, for one, "deserves praise for its role in aerating the soil." Rac-

coons consume numerous garden pests, and are especially fond of crickets and grasshoppers. The skunk is characterized as "one of our most valuable wildlife allies" for its services as a mouser and consumer of beetle grubs. Even the woodchuck, a critter commonly viewed by many gardeners with a concern bordering on alarm, is spoken of admiringly here for the 1.6 million tons of soil the species turns over annually in New York state alone. "Their diggings loosen and aerate the soil, letting in organic matter and moisture," the author says, though he admits that "the home gardener will probably prefer having earthworms perform these services."

Dennis also has kind words for some unloved plant species: Poison ivy is declared "a valuable wildlife food plant," while the dandelion is also righteously defended. (Bees collect pollen from dandelions in the forenoon; the flowers are pretty and can be made into wine; birds eat the deadhead seeds.) His plant lists, however, are not all come-hither: He fairmindedly mentions 58 deer-discouraging plants, among them iris, lupine, narcissus, poppy, rosemary, tulip, and zinnia.

The author rejoices in old-fashioned "acoustic" gardening, wherein "the trill of treefrogs and the croaking of frogs give us a respite from the many mechanical noises that assail our ears." In other words, the wildlife gardener is not to be confused with the Walkman gardener. Above all, "we must do what we can to ensure a peaceful environment" or, failing that, "peaceful times of the day" in our outbacks—no matter how small, no matter how urban.

Dennis makes the important point that mammals are moving into cities and suburbs as habitats in more rural areas are being destroyed. Because a similar human necessity is also causing gentrification, there is hope for peaceful coexistence—if the gentry will recognize an obligation to share some of its restored living space with the animals long since driven from it.

Incidentally, if you'd care to read this book back to front, it works just as well. By beginning at the Appendix you get an instant wildlife-gardening lexicon with economy-size working definitions: Dianthus "qualify chiefly as moth flowers"; dicentra "is mainly a bee plant"; columbine flowers are "ideal hummingbird and bumblebee drinking fountains"; barberry is "better for nesting sites and shelter than for food"; chrysanthemums "rate rather poorly from the standpoint of wildlife usage," and so on through the alphabet to zinnia, which "offers a great deal in the way of ornament and wildlife values." So much information, so many wildlife values are packed into the dozen pleasantly written essays that make up *The Wildlife Gardener* that you can easily begin tripartite planting: for food, shelter, and beauty—and then some.

PATTI HAGAN *does wildlife gardening in the depths of Brooklyn, N.Y.*

An Ambitious But Irresponsible Effort

After Eden: History, Ecology and Conscience
by Michael Tobias
Avant Books, 1985. $14.95, paper.

Pat Tompkins

THE INTRIGUING chapter titles in *After Eden*—"Prometheus in Arcadia: Japan, Bhutan, and Switzerland" and "Ecology and Existentialism" are two examples—may lead you to read on, wondering what the book is about. Unfortunately, you may read the entire book and still wonder.

In this ambitious failure, Michael Tobias draws from the whole of human history to consider our species' impact on the Earth: the effects of our contradictory good and evil actions. According to the author, these essays are "tied to the argument that human culture is conditioned to thinking and behaving in terms of the *aftermath*." He begins at the beginning—the development of life on the planet—and ends with a bleak fictional picture of the future. In between is everything but the proverbial kitchen sink, from the Japanese tea

ceremony to a short biography of Nikos Kazantzakis.

While he covers an impressive range of material, Tobias has trouble moving from one topic to another, or sticking to one idea for the duration of a paragraph. More important, he fails to supply the synthesis that could transform these "ramshackle, soft-spoken" essays (as he characterizes them) into something more.

Clearly, the author has read much and traveled far. He quotes frequently from a Who's Who of distinguished writers and has been to Bhutan, Japan, and many other countries he describes. But he undermines his efforts (with help from his editors) through carelessness at several levels. Nearly every page has at least one typographical or grammatical error. The writing is similarly lazy. Pause over this sentence, for instance: "Imagine the first desert aborigines to look up from their frolicksome [*sic*] cockroach clambake, a spouse picking lice from her adorable wild baby's brain, when suddenly, here comes the *Glory of Amsterdam*, sails full blown, scurvy-ridden soldiers yelling land ho!"

Why write *desert* if this *clambake* of insects takes place on the seashore? Why use *soldiers* instead of *sailors*, or *brain* instead of *head*? Perhaps Tobias feels clarity is unimportant when dealing with subjects such as the nature of aggression and the impact of the Industrial Revolution. Asides are often phrased ambiguously; the author alludes to "the Greek War of Independence for which Lord Byron gave his life," which suggests that Byron died in battle instead of in bed with a fever.

The text is also full of odd details and observations that are sometimes intriguing and sometimes gratuitous or baffling, as in this statement: "Brazilian Indians in the Matto Grosso can wield more verb tenses than could Plato." Such a remark suggests ignorance of linguistics more than anything else.

"'Song to Myself' . . . may be the greatest American poem," Tobias declares. He's wrong by only one word—it's "Song of Myself"—but such errors suggest superficial knowledge as much as inattentive proofreading. If Tobias mistakes the name of Whitman's poem,

how much confidence can we have in his many statistics on pollution and production levels? He piles statistics on statistics and assumes their implications are clear.

And what are we to make of statements like this one: "The *idea* of wealth exceeded its requirements. This runaway symbolism—the self-made millionaire, like autoeroticism—was its own manic transcendentalism." Along with sweeping generalizations, Tobias suffers lapses in logic here. Then there's the lavender language: "Poetry has rushed to string its laundry along the rusting barbed wire of human anguish." Such writing makes it difficult to appreciate the author's interesting accounts of Bangladesh and Switzerland, which he cites as examples of the worst and best in modern life.

Having discussed current worldwide problems and presented a few possible solutions, Tobias ends with a fictional epilogue, "Ice Bird," that reads like a parody of bad science fiction. This ludicrous story could be laughed off if it weren't linked to the serious issues of pollution, overpopulation, and species extinction.

With its cavalier attitude toward accuracy and clarity, *After Eden* could provide ammunition for, instead of against, exploiters of the Earth. Tobias' book is more than ramshackle—it's irresponsible.

PAT TOMPKINS *writes about books and public television programs for* San Francisco Focus *magazine.*

BRIEFLY NOTED

Volume One of Dennis Gagnon's ***Hike Los Angeles*** features 49 dayhikes in the city and along the coast, while Volume Two ranges farther afield, to the San Fernando Valley and San Gabriel Mountains. The books are $8.95 each from Western Tanager Press (1111 Pacific Ave., Santa Cruz, CA 95060). . . . A colorful and informative ***Road Guide to Hawaii Volcanoes National Park*** is available for $3.95 postpaid from Double Decker Press (4087 Silver Bar Rd., Mariposa, CA 95338). . . . Building on the pioneering work of Francis Farquhar, Peter Browning has produced the first comprehensive guide to Sierra Nevada place names in half a century. Published by Wilderness Press, ***Place Names of the Sierra Nevada*** ($19.95 cloth, $11.95 paper) includes more than 1,500 entries, with historical quotes and anecdotes, alternate place names, topo references, and other relevant material for each feature. . . . Seaweeds, long disdained by American cooks, are a vital ingredient in many national cuisines. Evelyn McConnaughey's ***Sea Vegetables*** ($12.95 cloth, $6.95 paper, plus $1 handling from Naturegraph, P.O. Box 1075, Happy Camp, CA 96039) is a forager's harvesting guide and cookbook that offers recipes for more than a hundred dishes, including sweet and sour *Pelvetiopsis* and *Nereocystis* pizza with tofu. . . . The French writer Jean Giono is perhaps best known in this country for his moving story "The Man Who Planted Hope and Grew Happiness," published in *Vogue* in 1954. The tale has been reprinted in book form as ***The Man Who Planted Trees*** (Chelsea Green Publishing Co., Chelsea, VT 05038; $13.50), with beautiful woodcuts by engraver Michael McCurdy. ■

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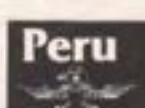

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I've heard that parts of the Appalachian Trail will be relocated to "more scenic" locations. I've also heard that development of older sections of the trail may be the real reason for the relocations. What's the story? (John A. Lamb, Hiawassee, Ga.)

From its creation in the 1920s, much of the 2,100-mile trail winding through 14 states between Georgia and Maine has crossed private property vulnerable to ownership changes and commercial development. This fact has periodically necessitated significant trail relocations.

In the 1960s the Appalachian Trail Conference, an umbrella organization made up of some 60 citizen groups, forged a unique partnership with the National Park Service to seek a permanent, protected corridor for the trail. They've also worked to relocate less scenic sections of the trail to more attractive areas.

The National Trails System Act put real power behind these good intentions by making the Appalachian a national scenic trail and allocating $95 million for direct purchase of land or easement rights. Easement contracts on farmland prohibit commercial development but allow farmers to grow specific crops in the easement areas, compensating them at fair market value for the loss of the land's potential commercial sale.

Although some relocated trail segments will cross farmlands—the only off-road option in some areas—planners will favor the most scenic routes available.

An estimated $72 million has already gone toward purchase of approximately 86 percent of the lands necessary to create a permanent Appalachian Trail. The Park Service estimates that it will require another four years to secure the remaining funds and complete the necessary purchases.

Why are passenger trains in the U.S. in danger of being eliminated? (Myron Norman, Saugerties, N.Y.)

The trouble with our trains began when the fabled rail coaches of the past—the Zephyr, Super Chief, Empire Builder, and Twentieth-Century Limited—began to lose the support of a public increasingly reliant on the automobile and airplane.

The newest incarnation of passenger rail—the National Railroad Passenger Corp. (Amtrak), created by Congress in 1970—has also been plagued with difficulties. A 1979 report by the Congressional Budget Office called Amtrak "an energy loser, both now and in the future," while the Reagan administration has blasted it as a "mobile federal money-burning machine" and called for elimination of its subsidy (which, it has been estimated, would reduce the federal deficit only one third of one percent.)

Amtrak answers its critics by citing the energy-efficiency of its trains. The company maintains that an 18-car train can move 1,400 passengers along a straight track with ease and safety. The same number of passengers would require 32 buses stretching along one mile of highway, or a caravan of automobiles 20 miles long.

A given length of railroad track also takes up less space than a highway, Amtrak says. The entire northeast corridor between Boston and Washington, D.C., the most popular run (traveled by 10.8 million passengers in 1985), appropriates only 6,000 acres of land. In contrast, the right-of-way for the portion of Interstate 95 that runs through Maryland—barely 100 miles—usurps 4,560 acres.

However, the survival of the nation's passenger trains may ultimately have nothing to do with open space, subsidy figures (all transportation systems receive some form of subsidy), or even best-case statistical data on fuel efficiency. After all, the Europeans, who continually upgrade their passenger systems, and the Japanese, whose famed bullet train has kept high-tech on track, have shown that a national rail system can work when government and the public support it.

John Harvey

Some stores offer a choice between having one's purchases bagged in paper or plastic. Which is the better choice, ecologically speaking? (Peter Ross, Santa Clara, Calif.)

Bag it in paper. Plastic does not break down naturally and is difficult to recycle, while paper bags are both biodegradable and recyclable. Because it is produced from wood, paper is a renewable resource. Plastic is produced from nonrenewable petroleum, at a price subject to fluctuations in the highly politicized international oil market.

Better than either of these options, of course, is to take a pack or shopping bag to the store with you.

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