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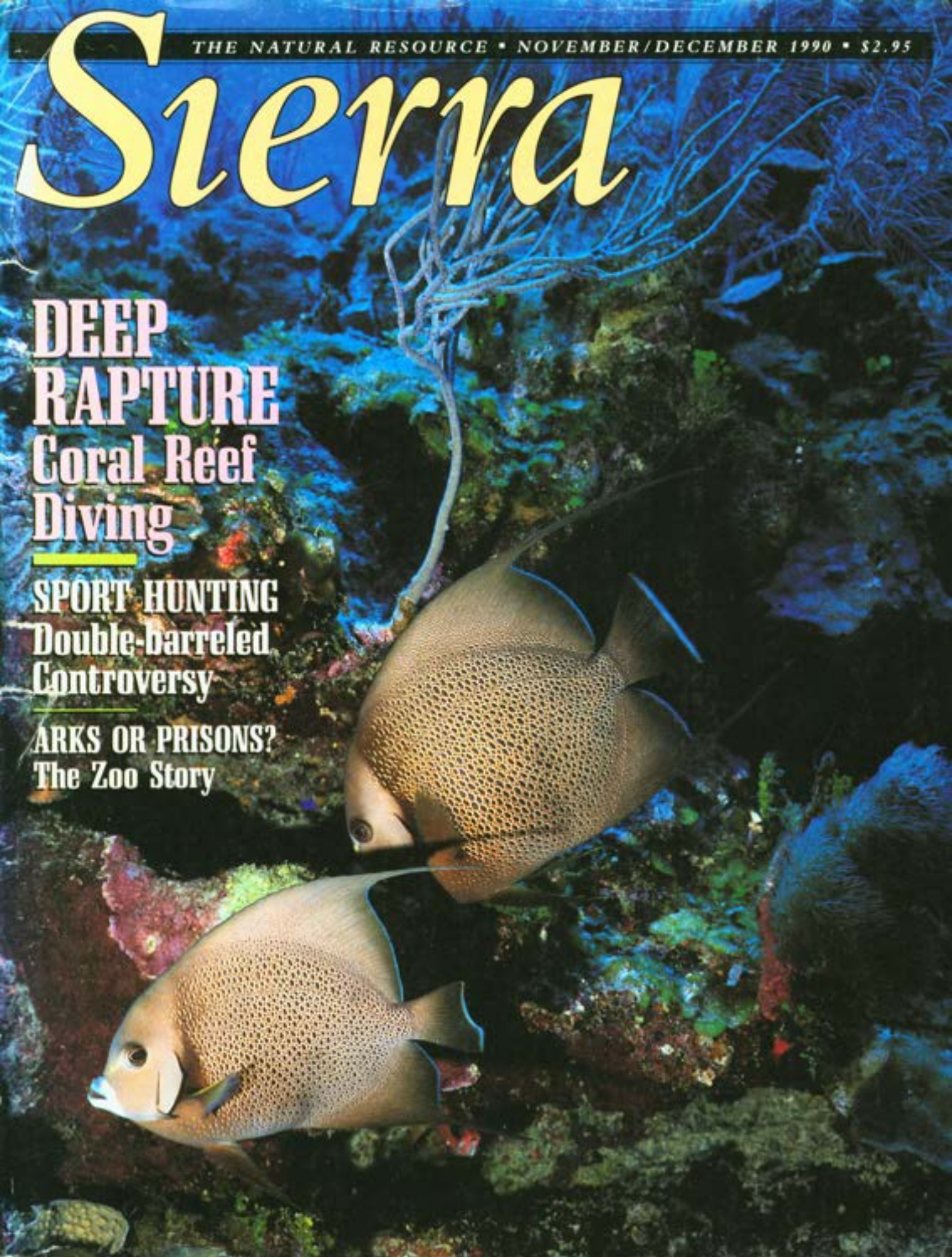

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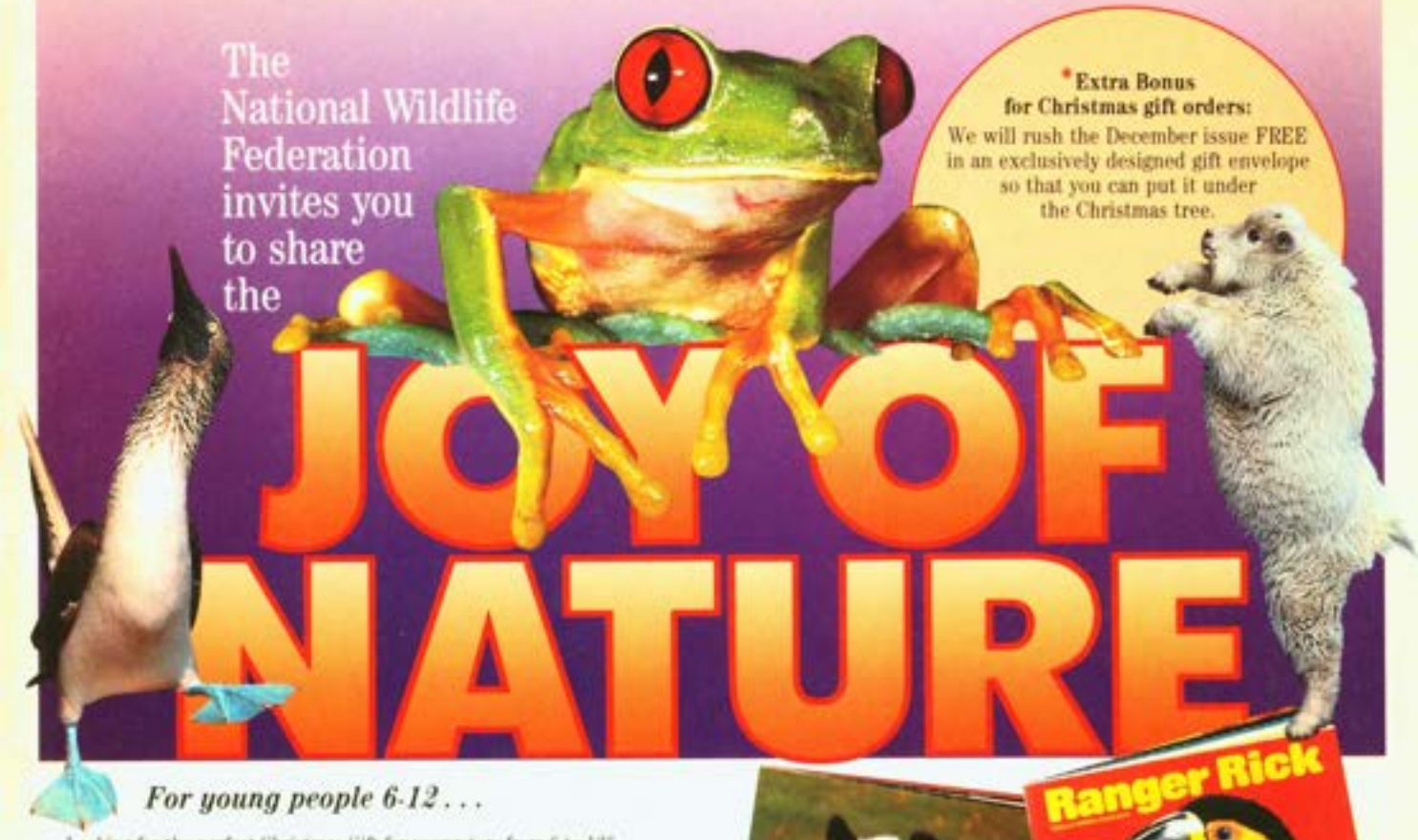

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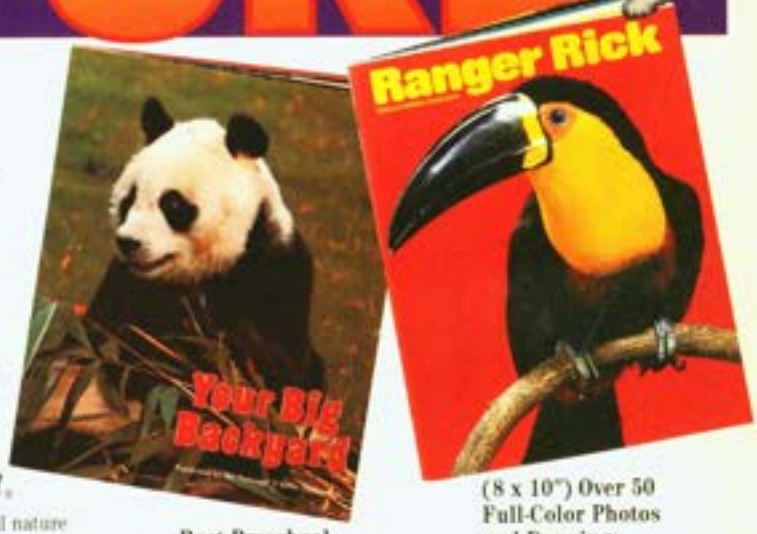

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Sears and OshKosh® will now be donating to The Nature Conservancy to help preserve our nation's natural environment. Since we offer a line of men's outdoor sportswear, it's only fitting that we help make sure there's always a place to wear it.

OSHKOSH B'GOSH THE GENUINE ARTICLE

The Nature Conservancy

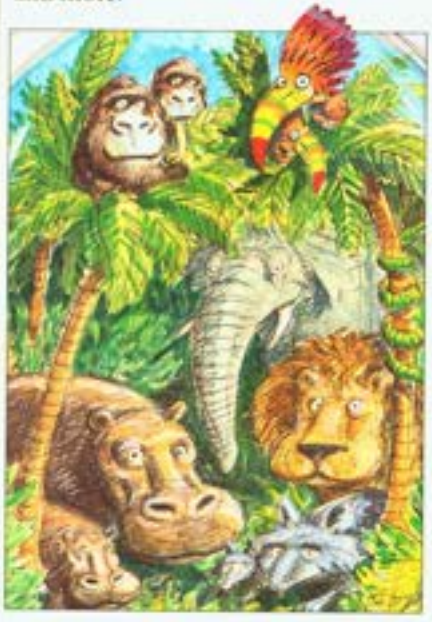
Granted, claiming that you'll save the world by purchasing our sportswear is an oversimplification, but we feel the contribution is, at least, a step in the right direction. So if the cynics among us think we're just another big company jumping on the "green" bandwagon by donating to The Nature Conservancy, so be it.

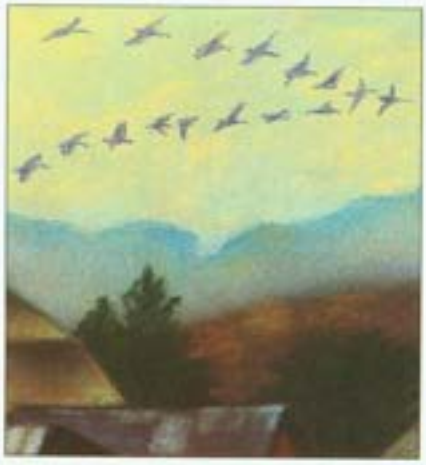
There are worse bandwagons we could have jumped on.

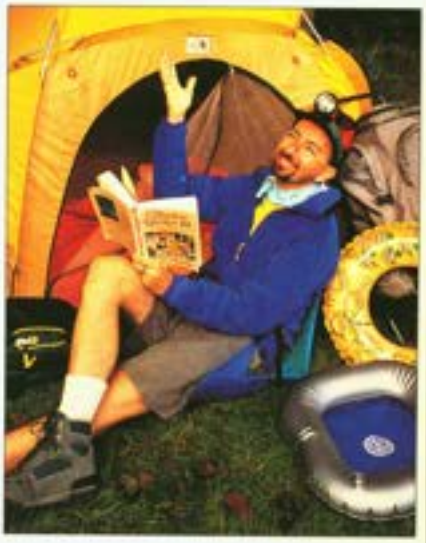
SEARS

VOL. 75/No. 6 NOVEMBER/DECEMBER 1990

Sierra







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THE ENERGY EQUATION

The United States lives today with the consequences of its shortsighted energy policy over the past decade. One such repercussion is that some of our fellow citizens—as well as the oil industry and those politicians it holds in thrall—still think it plausible to solve the latest oil crisis by opening our wildlife refuges, wilderness areas, and wild coastal waters to oil development.

This lack of foresight represents the height of economic and environmental irresponsibility. It is up to the Sierra Club and like-minded people to point out wiser solutions, while doing our utmost to block such destructive proposals.

Our country uses the lion's share of the world's resources, including oil, and manipulates its policies to keep energy prices as low as possible. In the interest of sustaining these ruinous policies—which pour ton after ton of pollutants into the atmosphere—many officials in high places want to keep the charade going, at the cost of sacrificing public health, environmental quality, and the nation's wild lands.

Long before Iraqi troops invaded Kuwait, the Sierra Club was leading the lobbying campaign in Washington to pass legislation mandating dramatically increased automotive fuel efficiency. Facilitating such an increase, we had been saying, would be the single most effective thing Congress could do to curtail global warming. It would also save more oil, year after year, than could conceivably be found in the Arctic National Wildlife Refuge so coveted by Big Oil and its political allies. And it would reduce urban pollution, while improving our national security by significantly lessening our dependence on imported oil. (The common-sense wisdom of this last point has since been fatefully underscored by faraway events.)

As the Sierra Club noted in a full-page ad published in *The New York Times* shortly after the Iraqi invasion, "If America had stayed on course in the 1980s, improving energy efficiency by just 3 percent a year, we wouldn't need the amount of oil the United States now imports from Kuwait, Iraq, and Saudi Arabia combined." (Japan made a concerted effort toward energy efficiency during the same period, and that nation now stands to suffer least from sharp fuel-price hikes stemming from the present crisis.) In short, increasing automotive fuel efficiency will make America more secure, improve the quality of our air, and leave for us and future generations the great wilderness that enriches our lives simply by being there, unexploited.

Legislation sponsored by Senator Richard Bryan (D-Nev.) and Representative Barbara Boxer (D-Calif.) would do this. Despite massive pressure from the White House and auto- and oil-industry lobbyists, the bill had majority support in the Senate in late September, but was blocked by a filibuster. The Bryan-Boxer bill will be central to the Sierra Club's agenda when the new Congress convenes in January.

We urge you to vote with this in mind, and then to write to your elected officials—for a rational energy policy, for the Arctic National Wildlife Refuge, and for other threatened wild places.

Michael L. Fischer
Sierra Club Executive Director

Sierra

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It's Now Or Never!

THE AMAZING AMAZON-GOING...GOING...GONE!

Dateline: Manaus, Brazil. The Amazing Amazon – Your chance, now or never.

You step quietly, hushed and aware. The air around you is moist, cool, shimmering in green light and full of sounds of the unknown and enchanted. Birds whistle and screech. Monkeys chatter and bustle about their business, while the sighing of the breezes high in the tree-tops blends all together into the world's greatest symphony of life—The Amazon Rain Forest.

Your mind drifts and wanders like the River. To the marvelous contrast between the exciting, open, sunny islands of the Caribbean–St. Thomas, Guadeloupe, Barbados–and the exotic, mysterious, unknown ports of the Amazon–Manaus, Boco do Valerio, Alter do Chao, Santarem, Belem, even Devil's Island off the coast. 14 days of adventure...in comfort.

And you realize that all the glorious days of your trip cruising the Caribbean cannot compare in mystery and wonder with what you find here along the Amazon. You find a part of yourself you had not known existed. Deep, wonderful, amazing. Is it any wonder that "Amazon" and "amazing" both come from the same word?

The Amazon Basin comprises nearly one-third of all the tropical forests in the world. And contains a greater variety of plants than any other, many of them gorgeous flowering exotics. Its trees house more birds than all the forests of North America, while the Amazon itself has more types of fish than all the rivers of Europe.

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In fact, the forest of the Amazon is home to at least two-thirds of the world's organisms. It nourishes 3 million known species and probably 10 times that number unknown!

The Amazon Rain Forest is without a doubt the greatest show on Planet Earth, but it's in danger of closing soon, for lack of an appreciative audience. What does this mean to you? Well, aside from the quality of the air we breathe, aside from the global warming of our climate, what it also means is that right now is the time to start planning your walk through the Rain Forest, your cruise up the Amazon.

The mighty Amazon River is the largest in the entire world, winding slowly through an area almost the size of the United States. Clouds of multi-colored butterflies flutter past over the water. Incredibly gorgeous parrots, macaws, and other fantastic birds fly overhead, screeching and squawking like crayola colored arrows of noisy joy.

Meanwhile, you sit relaxing on the deck of the elegant Epirotiki flagship, the World Renaissance, as it slips through the emerald green wonderland. The dull grey industrial world of the North is just a memory that seems lost forever in this primeval spring of life. And you can give thanks that, for now at least, that is the memory...and the Amazon Rain Forest is your reality. And you resolve with a growing legion around the world that the Amazon Basin and its Rain Forests shall remain a reality and not just a precious memory snuggled in your consciousness as you head home again.

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An important message from PAUL NEWMAN and JOANNE WOODWARD

"We share our love with seven wonderful children we have never seen.

"We'd like to tell you why."

Sponsored children pictured: Pedro, Gustavo, Carlos, Johnny, Andres, Jaime, and Laki.

Photo by Michael Fitz

"For 24 years we've been Save the Children sponsors. We began by sponsoring a desperately poor little girl from the mountains of Colombia.

"It was a joy to share our good fortune with her and to know that she was blossoming because someone cared enough to help. It made us want to help other children. And now we sponsor seven children around the world. Children we have come to understand and love. Thanks to Save the Children.

"If you've ever wondered, 'What can I do?' — the answer is 'You can help save a child.' If you are touched by needy children, there is no better way than Save the Children to reach out with caring, comfort and support.

"Please join us as a Save the Children sponsor. You'll see how much you can really do — in the eyes and in the progress of the child you sponsor. You'll bring new hope to a child you'll know personally, as we do, through photographs, reports and letters you can exchange, if you wish.

"You'll see despair turn to hope, and you'll feel the personal reward of knowing what your love and support can do.

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A sponsorship costs only $20 a month. Just 65¢ a day. Because 58 years of experience has taught us that direct handouts are the least effective way of helping children, your sponsorship contributions are not distributed in this way. Instead, combined with other sponsors', they are used to help children in the most effective way possible — by helping the entire community with projects and services such as health care, education, food production, and nutrition. So hard-working people can help themselves and save their own children.

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SCB 11/0

LETTERS

TAKING STOCK

As a member of the Sierra Club, I have been disturbed by the fact that *Sierra* is not published on recycled paper and, even worse, that the paper it is printed on is generally not recyclable. I was encouraged by "Recycling at the Sierra Club" in your July/August issue, which detailed your efforts to locate a suitable recycled stock. Please keep up the effort to go "clean," and share your results with other groups, since *Sierra* is not the only environmental publication printed on clay-coated paper.

William M. Quay
Phoenixville, Pennsylvania

We're happy to announce that this entire issue of Sierra *(save for the cover) is printed on 50-pound Recycled Ecology Coated stock from Repap Sales Corporation in Wisconsin, a newly available paper that contains 50 percent recycled fiber (20 percent de-inked and post-consumer waste paper, and 30 percent other recycled fibers). This is the best ratio of virgin fiber to pre- and post-consumer waste that we have yet obtained in a quality paper, and it represents a significant advance in the development of recycled coated paper for magazines.*

We're pleased to take advantage of this technological improvement, but we recognize that it doesn't solve all our problems. For one thing, our new paper is still clay-coated. Though one innovative process actually uses the clay from magazine paper in lieu of bleach to produce a brighter recycled newsprint, it is not widely enough employed to have spurred an effective magazine-collection system. Until such a system is in place around the country, clay coatings will continue to frustrate recycling efforts in most localities.

In addition, our new paper contains a goodly percentage of virgin fiber as well as preconsumer wastes (mill trimmings, etc.) that can only be considered "recycled" in light of the current absence of stringent definitions in this area. We've reported in some detail on this problem of definition in recent issues, and will continue to keep you abreast of recycling problems and prospects in issues to come.

AND THERE'S THE BELL

When I heard that historian Roderick Nash had been asked by *Sierra* to review my autobiography, *For Earth's Sake: The Life and Times of David Brower* (July/August), I was delighted. He has been overgenerous to me for years. So I hurried to read, if not to relish, everything his review said. My reaction? If only he had said, to half a million Sierra Club members, more that would have shed light on what I've tried to do with this book and that might be particularly relevant to the Club's membership.

Nash correctly notes that only half the book is new material; the other half is an anthology of old stuff, going back 55 years. The new part dwells too long, he thinks, on my youth, which John McPhee has already described better in *Encounters With the Archdruid*; I don't tell enough about why I left the Sierra Club staff and the Friends of the Earth board; I don't tell people what they should do currently to save us; I discourage compromise and defend Earth First!

Yes, I did anthologize, thinking it would be useful to reveal how early or late I came up with brilliant ideas and how they grew or withered. Several early forewords, my special addiction, are reprinted to explain what the Sierra Club and FOE exhibit-format books (and some others) were supposed to stimulate readers to do then, and to remind them now that the goal is still to be attained. Most of the anthologized material has long been inaccessible even to my surviving contemporaries, and has probably never been heard of by most of Rod's. There is good reason, I believe, not to leave it in limbo, but to make it readily and usefully retrievable.

There are, I think, a lot of what-to-do-today lessons to be learned from the accounts of a half-century of struggle with the U.S. Forest Service and timber industry, a struggle that is now getting frighteningly intense as the last ancient, irreplaceable forests fall. My

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four-decade struggle with the Bureau of Reclamation will be current as long as rivers run wild and undammed. The same goes for the effort to save Alaska, and now the coasts and the planet, from Government by Big Oil. Right now my material about what's wrong with zoos and captive breeding of wildlife needs looking at. So, I hope, do my old words and new on what is suicidal about society's addiction to endless economic growth and development—the euphemism for keeping colonialism alive. Most of these struggles were Sierra Club struggles of an earlier era, now being relived and therefore, I believe, worth referring to as the bell rings for new rounds in the same old bouts.

And what I wrote about Alaska, national parks, and environmental activism here and abroad is currently urgent. My travels tell me this as I hit crisis spots and long for my relaxed pre-retirement days.

The autobiography contains some things about my growing up, including mountaineering and war stories, that McPhee didn't write about at all. Those anecdotes help explain my subsequent behavior.

Part of what Rod missed, but was promised in my introduction, is the other half of the book, soon to be published. There wasn't room enough between two covers for all the words I had written by mid-August 1989, and even so there's still a plethora of materials that four covers will not embrace, such as my wartime correspondence with my wife, Anne.

The Sierra Club and FOE strife did hurt, and would have turned me gray if I hadn't already been so. I prefer to dwell on reconciliation (which has happened), not on getting even, whether or not it would be more fun. As Rod Nash suspects, and as I have confessed, it isn't good to spend one's remaining days looking backward.

Retirement has given me time to work on the uncounted things I feel are urgent and necessary now: promoting that fifth conference (and succeeding conferences) on the Fate and Hope of the Earth; urging that scores of great

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places, including the Soviet Union's Lake Baikal, be included on the World Heritage List because they belong there; pushing for new Earth Island Institute affiliates and a fortnightly Earth Island video journal. Moreover, we need a decade of environmental restoration, exciting people everywhere to rally around President Gorbachev's suggestion that there be an International Green Cross (or Green Circle, a term more acceptable to large parts of the world).

Entangling myself in these new efforts, I am glad to have readily at hand a review of what worked and what didn't. I hope it proves as useful to others, helping them learn from the past instead, as Santayana said, of being condemned to repeat it.

David R. Brower
Berkeley, California

RAUBER REDUX

Paul Rauber's "The Stockbroker's Smile" (July/August) contained several statements about the Calvert Social Investment Fund, all but one of which were in error.

It is true, and we are proud of the fact, that Sierra Club Executive Director Michael Fischer is a member of our advisory council on social-investment issues. However, it is totally false that this group or any other part of our organization has ever considered an investment in "a pharmaceutical company that used endangered species, obtained illegally, to test AIDS drugs."

It is also untrue that any of the Calvert Social Investment Fund portfolios ever owned the stock of Hawaii Electric Industries. It is true that our money-market portfolio held commercial paper of this company periodically between June 1989 and February 1990. At that time we understood Hawaii Electric to be a totally non-nuclear utility with a good record on environmental issues and strong interest in developing renewable power resources.

Later we became aware of the utility's involvement with Union Oil Company of California in the proposed acquisition of a national park on the slopes of Mauna Loa for the explo-

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tation of geothermal resources. Contrary to the statement in your article, this information has caused us to judge Hawaii Electric as unsuitable for purchase, based on the Fund's environmental criteria. We did not "drop the company . . . for economic reasons," but rather because our short-term investment matured. The company has now been removed from our approved list of potential investments for environmental reasons.

Steven J. Schueth, Vice-President
Socially Responsible Investing
Calvert Group
Bethesda, Maryland

Mr. Rauber criticizes higher fees for recycling based on his erroneous assumption that recycling either costs nothing or costs less than disposal. His assumption is wrong for most areas of the country, where disposal costs are still low in relation to collection costs, and where recycling costs more due to collection and material-handling costs. In fact, if Mr. Rauber would do some serious homework and compare the design, construction, and operation of waste-management systems, he would find that the large private firms operate safer disposal facilities and more cost-effective recycling operations. In the landfill area they typically regulate themselves more tightly than local governments require.

Michael William Mullen
Troy, Alabama

Part of Paul Rauber's response to the letter from Waste Management, Inc.'s William Brown in your September/October issue is deeply disturbing. While the company has indeed been fined for hazardous-waste violations and may not be treating all recyclable goods properly, Mr. Rauber attacks WMI's recycling operation for a very curious reason: "As usual, WMI profits in every possible way." He lists, in a tone of mounting outrage, four separate ways in which Waste Management actually has the nerve to earn money from its Recycle America program. I have news for Mr. Rauber: The United States is—and thrives on being—a cap-

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italist society. Waste Management is *entitled* to profit in every possible way from its recycling business, and there is no basis whatsoever to attack the company for doing just that.

Perhaps Mr. Rauber needs to be reminded that this is 1990. We have seen the back side of the Berlin Wall, and it is blackened with soot and carcinogens. It is time to stop pretending that capitalism is the enemy. If we are not to suffocate beneath our own garbage, recycling must become a major industry—but it is doomed to remain a backwater of co-ops and underfunded volunteers unless major corporations are encouraged to enter it as a business.

Until environmentalists stop regarding the profit motive as a form of pollution in itself—and instead start recognizing that it is an awesomely powerful incentive for innovation—it is difficult to see how we can ever make real progress.

Jason Zweig
Brooklyn, New York

Paul Rauber responds: *The source of my information on Calvert's ethical quandary was Michael Fischer himself. Fischer maintains that the example given was only a hypothetical case being considered by the Fund's advisory council—a distinction that was not made clear in our original interview.*

Hawaii Electric was listed as one of Calvert's investments when I called the company's 800 number in researching my article, and the investment was confirmed by Schueth himself. "We probably dropped it for financial reasons," Schueth told me then. "It probably fell out of favor from an investment standpoint."

As for Messrs. Mullen and Zweig, they are welcome to pay someone to haul away their recyclables if they want to; I can think of no other field of capitalist enterprise where the owners of a raw material pay for the pleasure of giving it to another party who will resell it for a profit. In my own town of Berkeley, California, where recyclables are collected by a non-profit community organization, recycling charges are built into the garbage-collection fee. The more one recycles, the lower the fee. Which system is more likely to encourage recycling?

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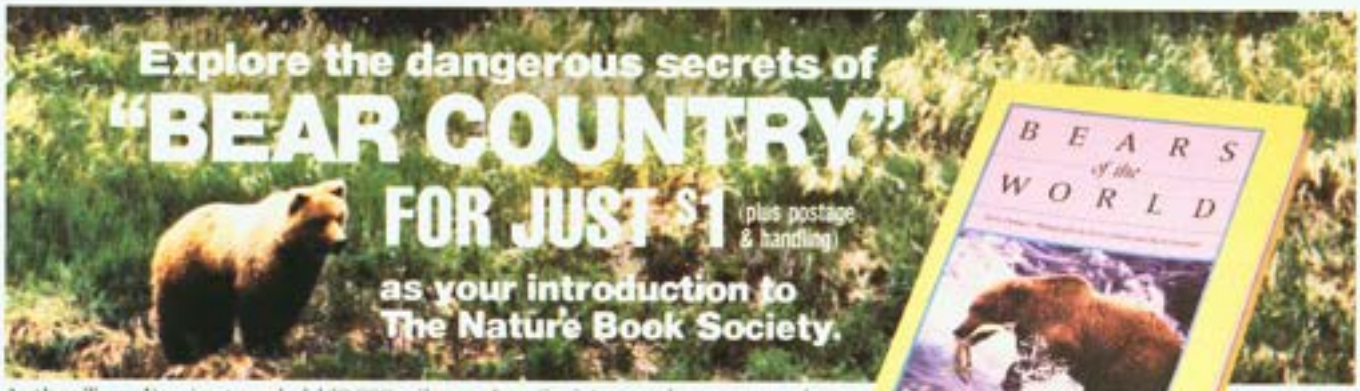

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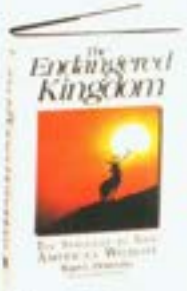

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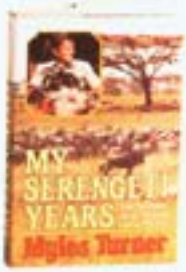

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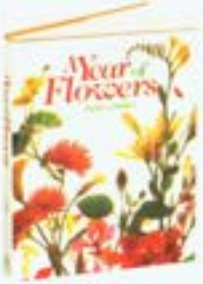

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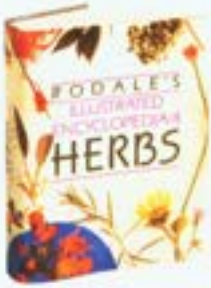

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WHY ALL THE YEW-HEWING?

A chemical called taxol, found in the bark of the Pacific yew (*Taxus brevifolia*), is giving birth to a new family of cancer-fighting drugs. So unusual is taxol's mode of action that the National Cancer Institute (NCI) is investigating its use in treating nearly a dozen different types of cancer. In one study, taxol produced a remarkable 30 percent remission rate in a group of women with ovarian cancer for whom all other treatments had failed.

What's good news for cancer patients may be bad news for the yew. "To get the golden egg, you've got to kill the goose," observes yew authority Hal Hartzell. As demand for yew bark skyrockets, collectors throughout the Northwest are cutting the trees down, stripping the bark, and shipping it to Hauser Chemical Company in Boulder, Colorado, where the taxol is extracted. Twenty thousand pounds of dried bark yield one kilogram of taxol, says Hauser's Neal Jans. At an estimated 15 pounds of bark per yew, it would take more than 600 trees to make one pound of drug, which in turn is enough to treat 100 patients.

The taxol extracted by Hauser is supplied to Bristol-Myers Squibb, which refines the drug and ships it to the NCI. None of these parties would confirm a rumor that they want a million pounds of bark a year for the next ten years, but West Coast collectors say they're hoping to supply 500,000 pounds this year to help meet demand—which could mean the death of more than 33,000 trees. (Several labs are trying to create synthetic taxol, but the chemical's complex structure makes that challenge particularly difficult.)

JIM STIAK

No one is claiming yet that the Pacific yew faces imminent extinction; it ranges from Alaska to San Francisco, from the Pacific to the Rockies. Chuck Bolsinger of the U.S. Forest Service Pacific Northwest Research Station in Portland estimates that there are 12.7 million yews *outside* of Forest Service land in California, Oregon, and Washington, and an uncounted number growing inside the national forests.

Other observers, however, think those figures are wildly inflated, and point out that the yew grows very slowly, while the demand for taxol is increasing rapidly. Those people are among the leaders in the fight to preserve the yew. One of them, Lane County (Oregon) Commissioner Jerry Rust, says: "We could be using the limbs and needles for taxol, but the chemical companies don't want to, because it's not as efficient as using the bark. We could be clipping the yews like hedges, which would not only give us taxol but also encourage the yew to resprout. Instead of wisely managing a natural resource, we're butchering it."

The Pacific Yew Conservation Group, of which Rust is a founding member, met in California this August to draft legislation that would protect the yew. Their proposal would declare the yew a National Strategic Resource and establish guidelines for harvesting the tree.

But until such a bill makes its way through Congress, yews will continue to fall. "What we're left with," says Rust, "is a dying-out, slow-growing species that cures cancer."

—Jim Stiak

BACKGROUND PHOTO: WILLARD CLAY

THE CASE OF COTTONWOOD MILE

When 28 cottonwood trees planted by her great-grandfather were felled by a county work crew upgrading a gravel road on her property, Barbara Berkenpas took the county engineer to court.

Said the miffed landowner: "He's no Johnny Appleseed."

The cottonwoods were among the oldest in Iowa, so tall (more than 80 feet) that local pilots had become accustomed to using them as navigational aids. But neither their stature nor their utility much impressed the Osceola County Engineer, whose construction plan called for removal of the trees.

"We offered several alternatives to cutting down Cottonwood Mile," recalls Berkenpas. "We were even willing to pay the cost of hiring another engineer to replan the job. A county supervisor promised us that we'd be consulted before anything was done with the road, and that we'd be given time to do research about the trees" (which might have led to their preservation as historic landmarks).

Despite this promise, a survey crew came in the day after the Berkenpases left on vacation. The next day, the trees fell.

The case went to court, where a ruling in the plaintiffs' favor found that the tree-cutting indeed constituted unlawful injury to private property. But the court awarded barely more than $7,000 in damages—an amount the Berkenpases felt insubstantial. The appellate court agreed, and in returning the case to the trial court instructed that the trees' "intrinsic value" be assessed. On August 7 the Berkenpases were awarded $22,850.

Robert Eidsmoe, the plaintiffs' attorney, believes the decision sets a precedent: "Traditionally, most courts have been quite conservative when awarding damages for loss of trees. But the appellate court indicated that the trial court should consider their sentimental, historic, and environmental value."

"This was a personal victory," says Berkenpas. "Since my children were old enough to listen, we have always told them to stand up for what they know is right. I hope that legislatures will use our case as a precedent; we should build roads around trees, not over them."—*Keith Nichols*

The Solar Keychain Is on Page 96

In addition to the canvas bags, home recycling bins, and water-saving shower heads being offered these days by everyone from Esprit to Hammacher-Schlemmer, the Real Goods Trading Company sells a bevy of low-, medium-, and high-tech tools so intelligently designed, they could make consumerism downright responsible again.

You say you live downwind from a nuclear plant? The Monitor 4 pocket geiger counter ($295) could be just the ticker for you. Trying to reduce your personal dependence on foreign oil? Enough energy-efficient lights—solar, compact fluorescent, and incandescent—are offered to fill 39 pages in Real Goods' alternative-energy catalog.

The company started on a small scale in 1986, providing a limited number of goods to an essentially rural, grow-it-yourself clientele. Today the material bulwarks of the back-to-the-land movement remain available in profusion: solar panels, waterless composting toilets, even a propane-powered deep freezer. But there are items to suit the tastes of urban condo-dwellers as well—like a baby-bottle warmer that plugs into a cigarette lighter ($15), or an old-style carpet sweeper that works on hardwood floors too ($35).

In addition to some pretty heavy-duty stuff like DC-powered refrigerators (ten models between $1,295 and $2,395) and prepackaged photovoltaic power systems (topping out at nine grand), Real Goods has plenty of moderately priced items to meet existing needs—or to create needs you didn't know you had. Paging through the company's two "lifestyle magazines" (try not to call them catalogs), you may find your eye caught by a solar-powered aerated bait bucket (which you can employ in peace if you also pop for a solar-powered high-frequency mosquito repeller), or perhaps by some specially formulated non-toxic shoe polish, a tube of organic spot remover, or the inventory of books, toys, bumper stickers, maps, hats, and posters.

A one-year subscription ($20) brings you the current *Alternative Energy Sourcebook* (300+ pages), the next three editions of the *Real Good News* catalog, plus a choice of free gifts. The *Sourcebook* alone—a bible of sorts for people in 44 countries living "off the grid"—costs $10 postpaid. Now *that's* a real good deal. Write to Real Goods at 966 Mazzoni St., Ukiah, CA 95482.

—T. K. Kuhn

JAMIE HOGAN

¡MEXICO!

Photographer Michael Calderwood's Mexico: A Higher Vision *offers an aerial perspective on the varied landscape between Quintana Roo and Sonora. The 151-image book is $49.95 from ALT1 Publishing, 4180 La Jolla Village Drive, Suite 250, La Jolla, CA 92037.*

MICHAEL CALDERWOOD PHOTOS

Top: *The old quarter of Mexico City.* Middle: *Environmental sculpture on the campus of the University of Mexico.* Bottom: *Isla San Francisquito in the Sea of Cortez.*

Greenbacks for Green Books

When Polish environmentalist Jacek Purat first visited the United States in 1981, what surprised him most was the sheer number of books available about the environment. As a graduate student in mammalogy, Purat had been so thwarted by the lack of information in his field that he'd left home to study abroad. Stranded in Berkeley when Poland declared martial law, he wandered through the city's well-stocked bookstores and libraries, wondering what he could do for his colleagues back home.

He thought of his Polish friends working with only the scarcest resources to stem their country's deepening environmental crisis. He remembered the frustration of dealing with libraries and government agencies that gave wrong or incomplete information on vital questions, the agony of waiting for science magazines and new books to trickle in from the West.

In 1986, Purat started a group called Green Library to make environmental information available not only in Poland but worldwide. The group sends books to countries suffering from severe environmental problems, and in many cases helps build libraries to store the books.

Purat and his friends collected books (and money to buy more) door-to-door in Berkeley. In the first two years they amassed some 90,000 publications.

"Once people heard we were doing this," Purat says, "we started getting requests from all over: Nepal, Hungary, and countries in South America and Africa. Every one of them has its own environmental problems caused by industrialism, or deforestation, or other things that qualify it for consideration as 'ecologically needy.'" It's that common denominator of "neediness"—characterized in large part by lack of information—that's the basic criterion the Green Library considers when setting up a branch.

At first they sent books abroad to anyone who asked, but after a while they began to fear that the materials were not getting into the hands of those who needed them most: independent scientists, environmentalists, and students.

"Libraries in many other countries don't function the same as they do here," Purat says. "The library system is often controlled by the government, which limits access and censors what people are allowed to read."

Purat decided to create a network of independent libraries run by local environmental groups in each country. The local groups promise to create open-stack libraries, catalog the books, and translate major titles. They also agree to make the books available to everyone, with no censorship or pre-selection.

Green Library has sent books to Vietnam, Cuba, Latvia, Hungary, Czechoslovakia, and Nepal (where illiteracy is so high that books must be put on tape). In August the group opened its first complete environmental-science library in Poznan, Poland. The library, run by the Polish Ecological Club, subscribes to 400 journals and boasts 10,000 books.

REID STEVENS

Green Library expects to open a library in Riga, Latvia, by the end of 1990. In the next two years, Purat hopes, 15 independent green libraries will be built throughout Eastern Europe and the Soviet Union.

Though door-to-door canvassing still brings in some income, four out of every five Green Library dollars come from grants and donations. For information, write to 1918 Bonita St., Berkeley, CA 94710, or telephone (415) 841-9975. ***—Laura Hagar***

EDWARD CALDWELL

The (Juan) Valdez Principles

If you're a health-conscious, ecologically aware soul trying to live in keeping with your values, finding a place for coffee isn't easy—unless you can handle the contradictions.

We all know about caffeine, one of the world's most popular drugs. It makes muscles move more powerfully and with less fatigue, while stimulating the cerebral cortex to improve attention and concentration. Caffeine speeds up the heart, induces the stomach to secrete more acid, and acts on the kidneys to increase urine production.

Some critics call caffeine a poison that the body just can't wait to get rid of. That's why you perk up after drinking a cup: Your body is working faster to purge the toxin. Those who say caffeine relaxes them are more likely recovering from minor withdrawal symptoms.

Caffeine is generally considered bad news for pregnant women and nursing mothers. The Food and Drug Administration advises expectant mothers to limit caffeine intake, since studies show that rats fed large doses of caffeine have more babies with birth defects than those not taking coffee breaks. (Studies with humans are not yet conclusive on this issue.) Other research has investigated potential links between caffeine and heart disease, various cancers, and benign breast cysts. There is little evidence so far, however, that caffeine in small quantities (fewer than four cups of coffee a day) has negative long-term health effects.

What about taking the decaf path? Choose your poison: The chemical most commonly used to strip caffeine from the bean is methylene chloride, the active ingredient in no one's favorite think-drink, paint thinner. Massive amounts of methylene chloride have caused tumors in lab animals, but there is no evidence that a significant amount is present by the time the decaffeinated bean makes it into your morning cuppa. Water-process decaffeination is less common and more costly, but probably safer.

Then there's always geopolitical guilt to deal with. Coffee is grown mostly in developing countries. To get cash to pay back loans from Western banks, these countries must dedicate their land and people to creating products for wealthy foreigners, instead of growing food for themselves. In Central America, for example, despite widespread hunger and malnutrition, more than half the arable land is devoted to export crops, primarily coffee, cotton, and cocoa. This emphasis on exports also increases the pressure on local people to overexploit the remaining land and resources just to put food on the table.

A side effect of this neocolonial trade arrangement is pesticide residue in our coffee. Almost all coffee-growing countries use chemicals that are banned in the United States. While we've got the FDA to inspect coffee for residual pesticides (and the agency does turn back cargoes of imported beans every year), only a small percent of the shipments are sampled; the rest are waved through at the border.

With all of this, coffee-drinkers still face far less risk than the workers in U.S. chemical plants or the farmworkers in coffee-growing countries that use these banned pesticides. There is good news, however. The 1990 Farm Bill includes "circle of poison" provisions that will ban the export of pesticides the EPA considers too dangerous for domestic farm use. Exporters will be required to warn recipient countries before pesticides are shipped (and give them the opportunity to refuse the shipments), while the importation of food containing pesticides banned in the United States will be prohibited.

The best way to deal with coffee's contradictions is not to drink the stuff. But how to stop? Domestic travel is one sure strategy: There's nothing like a cup of tepid, battery-acid coffee in a Styrofoam cup in an Elko, Nevada, cafe to make you reconsider your choice of beverage.

—John Byrne Barry

Float It 'n' Tote It

Each year the California Coastal Commission sponsors a Coastal Cleanup Day. In 1989, legions of shoreline-scourers took time to inventory the things they found, including 52,031 cigarette butts; 41,520 "small foamed-plastic pieces"; 40,564 paper pieces; 34,614 glass pieces; 28,129 plastic pieces; 20,736 plastic cups, spoons, forks, and straws; 20,518 glass bottles; 17,357 plastic caps and lids; 16,562 metal bottle caps; 13,664 metal cans; 12,953 foamed-plastic cups, and 12,921 miscellaneous plastic bags. Pretty mundane stuff—albeit much too much of it.

Still, it's the unique items recovered from the Great Moist Dumpsite between San Diego and the Oregon border that really make you wonder. A partial list from last year includes: a pair of leopard bikini underwear, an electric teddy bear, a Mercedes-Benz bumper, a Volvo hubcap, a falsie pad, a snakebite kit, a Model F-4 bathythermograph, a white-leather cowboy boot, lavender pantyhose, a one-dollar bill, a *ten*-dollar bill, a Monopoly board, a tube of vampire blood, part of a bowling ball (presumably not the holes), a "smushed Twinkie," a letter in a bottle, a dead mouse in a bottle, a dead pig, a dead shrew, a headless Count Dracula toy, half a $50 bill, a crack pipe, a Barbie-doll shoe, a Barbie-doll *head*, 20 sticks of dynamite, a blow-dryer, a "burned sacrificial surfboard" (?), tear-away panties, a fake $20 bill, a plastic Santa Claus (with sleigh), *another* burned sacrificial surfboard (?), a cassette of Madonna's "Like a Virgin," a plastic toy eyeball, a blue condom, and—our office favorite—a button proclaiming "I Love a Clean San Diego."

—J.F.K.

HEIDI STEVENS ILLUSTRATIONS

PHILIP COLBERT

A Guide to the Tam What Am

Though Mt. Tamalpais is the best-known peak in the San Francisco Bay Area, many visitors catch only a glimpse of its redwoods before a tour bus whisks them back to Fisherman's Wharf. Their oversight happily leaves Mt. Tam less crowded for the natives, some of whom rarely hike anywhere else. (The Sierra Club has been active on Tam since 1902, and still leads more than 200 trips there each year.)

Barry Spitz describes virtually every pathway on the mountain in *Tamalpais Trails* (available postpaid for $16.95 from Potrero Meadow Publishing Co., P.O. Box 3007, San Anselmo, CA 94960). His research will enlighten even veteran Tam hikers. For example, to avoid congestion on the main creekside trail through Muir Woods, try reaching the redwoods via the less-traveled Fern Canyon or Ben Johnson trails. Runners eager to check out the legendary Dipsea Trail can cover the 6.8 miles between Mill Valley and Stinson Beach knowing that the worst is behind them after the first 671 of the infamous Dipsea Steps. And newcomers looking to orient themselves to the Bay Area can stroll the .68-mile Verna Dunshee Trail around 2,571-foot East Peak, enjoying views north to Mendocino County and east—on the clearest days—to the Sierra Nevada, 160 miles away.

JONATHAN F. KING

There's much more to choose from among Tam's 200 miles of trail—like the Sun Trail, boasting wildflowers and Pacific views; the Huckleberry Trail, with rhododendrons interspersed among its eponymous shrubs; the Steep Ravine and Cataract trails, with their rushing winter waterfalls. . . .

—Matthew Davis

WILDLIFE

A New Breed of Zoo

What some people see as a sentence of life imprisonment may be many endangered species' only hope for survival.

VICTOR JUHASZ

Tom Arrandale

ONE OF THE LAST Mexican wolves remaining in the Southwest, its yellow eyes alert, rests in the shade of a massive cottonwood. Nine wolf pups scamper through cholla and brush near the den their mother dug last spring.

A century ago, the above scene would have taken place in the silence of desert mountains. But this family dwells in the wolf enclosure next door to the polar bear exhibit at New Mexico's Rio Grande Zoo—where jetliners roar overhead, sirens can be heard wailing a mile away in downtown Albuquerque, and visiting schoolkids break into howls when they see the "coyotes."

It's a fate that may sound worse than death, but not when you consider that Mexican wolves face extinction in the wild. Only a dozen or so of the animals still roam the mountains of Sonora and Chihuahua. Since Mexican law offers it little protection from ranchers and hunters, *el lobo Mexicano* may survive only because U.S. city zoos have provided refuge.

Not long ago, zoos were primarily places where parents took children for an afternoon's entertainment. Within the past 15 years, however, zoological parks and aquariums have embraced a more serious mission: to serve as "arks" for dwindling species like the wolf. Zoos around the world are responding to the effects of poaching and habitat destruction with ambitious captive-breeding plans designed to preserve not just individual animals for human enjoyment but the genetic material of entire species.

These are holding operations, zoo curators say, that save species until healthy populations of offspring can be returned to native habitats. "If animals like the rhinoceros and the great ape survive another 100 years, it will only be because the zoos have maintained captive populations," says Michael Soulé, a University of California at Santa Cruz biologist.

Some conservationists have misgivings about entrusting the future of wild creatures to zoo curators. They fear that breeding programs may lull the public into assuming that wildlife has been saved whenever zoo publicists trumpet the birth of a litter of cuddly wolf pups or some other threatened species. Captive-bred animals are being condemned to life behind bars, they say, because development continues to destroy what really saves wildlife: adequate expanses of habitat free from human intrusion.

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Club and several other environmental groups objected when federal biologists trapped the last wild California condor and shipped it to the San Diego Zoo as part of an experimental captive-breeding program. Since then, condors have produced 13 chicks at San Diego and Los Angeles zoo breeding compounds.

The condor recovery team is planning to reintroduce its progeny to a Southern California refuge, perhaps as early as next year. But with no condors left in the wild, pressure has been building to develop what's left of their already-depleted habitat, says Mark Palmer, a member of the Sierra Club's Wildlife Committee. He suspects that biologists will be forced to provide the birds with food to keep them close to the release site. "Then we'll have condors that are treated like domestic animals," he says. The Sierra Club supports captive-breeding programs, Palmer adds, but only as part of comprehensive efforts that include preserving natural habitats.

Can zoos, which for centuries contributed to wildlife's decline by ruthlessly amassing exotic birds and beasts from around the world, help diminishing species get back on their feet—and back to their native habitats? "It will vary with the zoo, but some of them are doing outstanding work on wildlife conservation," Palmer says.

Breeding programs have already paid off for a handful of species. Arabian oryx from the Phoenix Zoo now roam the deserts of Oman and Jordan. Golden lion tamarins bred at the National Zoo in Washington, D.C., have been released in Brazilian rainforests. Tacoma's Point Defiance Zoo and the Wild Canid Survival Center near St. Louis reared red wolves that have been reintroduced to a North Carolina wildlife refuge.

The best zoos go to great lengths to keep captive populations slated for reintroduction in as wild a condition as possible. Albuquerque's zoo houses its wolves in a stockade with only two viewing windows high up on the walls, and the animals are rarely handled. Still fearful of humans, the wolves flee to the opposite wall when keepers enter their enclosure.

To keep chicks from imprinting on humans, California's captive condors are kept isolated from public view. The zoos are spending substantial amounts "to save a bird that [we] can't show to the public," says William Toone, bird curator at the San Diego Zoo Wild Animal Park. "That shows our commitment to conservation."

But it's not easy for humans to prepare animals for life in the wild. The zoo-reared red wolves, for example, grew up eating dog chow; only about half survived poachers, drivers, and the tests of nature in the Carolina refuge. (Despite those mortalities, the experiment is still considered successful.) There are also political obstacles to wildlife reintroduction. In the Southwest, for instance, plans to return zoo-bred wolves to the wild have been stalled by ranchers.

In the long run, "captive breeding is a hedge against extinction," says Michael Hutchins, conservation director for the American Association of Zoological Parks and Aquariums. American zoos have joined forces to draft 53 "species survival plans" for wildlife facing extirpation. Following these biological blueprints, cooperating zoos exchange animals to expand captive populations while guarding against inbreeding.

Biologists have suggested that zoos will need to maintain genetically viable populations of key endangered species for as long as 200 years. By then, they hope, world population growth might taper off enough so that habitat can be restored and replenished with native wildlife. But Soulé and William Conway, director of the New York Zoological Society, have calculated that today's zoos have space to preserve healthy populations of only 925 of the 2,000 large vertebrate species that they predict could vanish from the planet.

To date, zoos have concentrated on breeding "charismatic megafauna," cuddly critters like tigers and gorillas that draw visitors and financial contributions. Visitors are considered critical to solving the wildlife crisis: Zoos can

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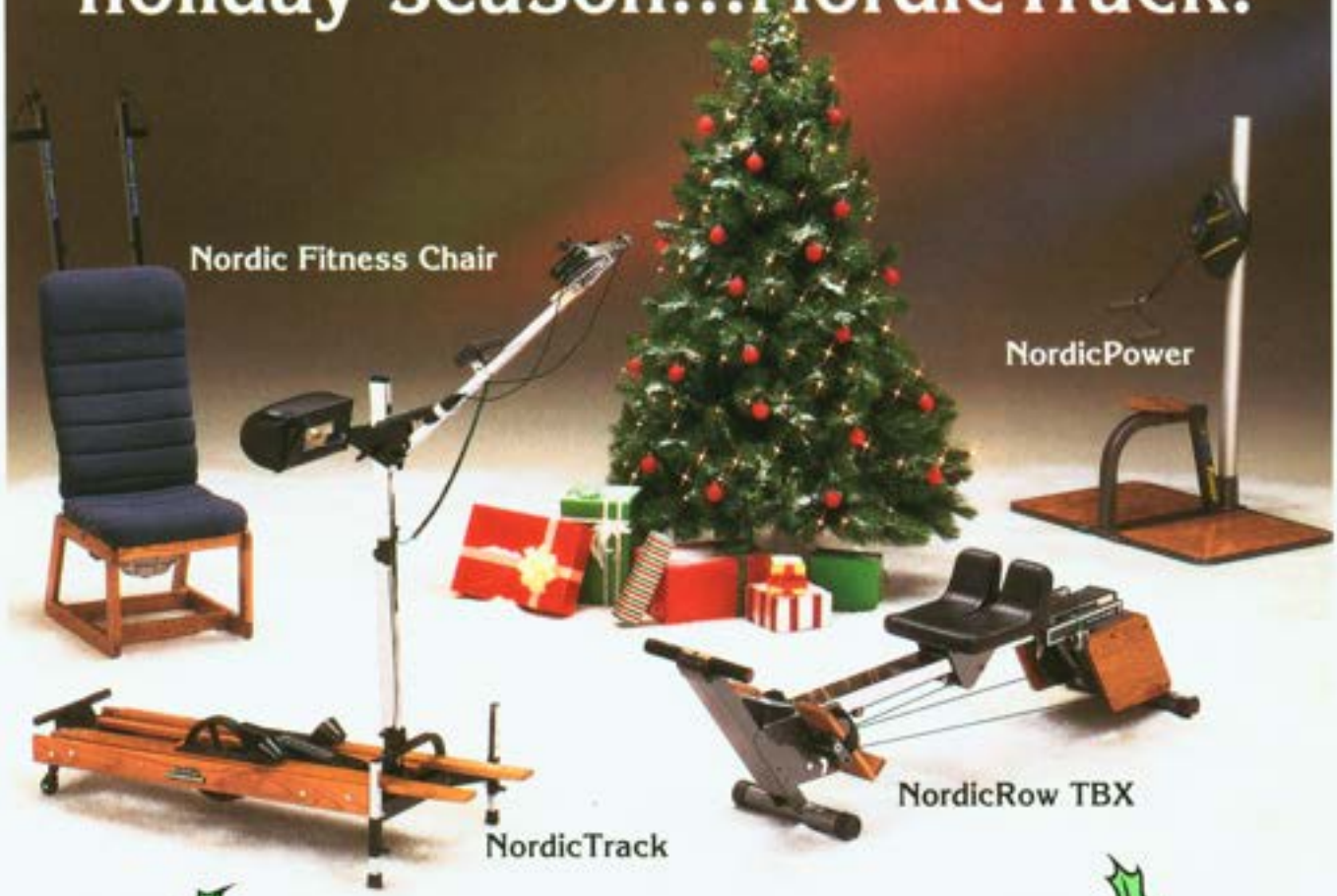

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educate a largely unaware public about the problems facing wildlife worldwide. The best zoos are tearing down turn-of-the-century cages and replacing them with "immersion" exhibits showing wildlife in simulated natural habitats. At imaginative facilities like the Bronx Zoo's Jungle World and the Seattle Zoo's African Savannah, visitors can see how different species have adapted to their natural surroundings and learn how human incursions threaten the survival of wild animals.

But no zoo can duplicate nature by letting lions stalk antelope or by feeding live prey to wolves. At best, "zoos are becoming facsimiles—or perhaps caricatures—of how animals once were in their natural habitat," contends Michael Fox, scientific director for the Humane Society of the United States. "If the right policies toward nature were pursued, we would need no zoos at all."

TOM ARRANDALE *is a writer in Albuquerque, New Mexico.*

To Bolt or Not to Bolt

So graceful are they that rock climbers have been compared to ballet dancers. Yet at times they act more like riveters.

Ed Webster

A WIRY YOUNG CLIMBER slips spider-like up an outward-angled rock face, clipping a nylon rope into carabiners attached to bolted anchors as she goes. Though the moves are finger-wrenching, she breezes through them: Earlier in the day, while hanging by top-rope and drilling holes for the bolts needed to secure her in case of a fall, she had scrutinized every fingernail-width handhold and foothold on the face. Now, after dipping her fingers into a brightly colored bag of sweat-absorbing chalk, she lunges for the last handhold and hauls herself over the top of the rock.

Such scenes are repeated almost daily throughout North America and much of the world. Many of today's young rock climbers, like those of preceding generations, are eager to make first ascents and take their place in climbing history. Unfortunately for them, virtually all of the most readily climbed routes in Europe and the United States—cliff faces with vertical cracks allowing the use of pitons, chocks, or other special equipment to guard against falls—were completed by the technical-climbing vanguard of the late 1930s to early 1980s. The blank faces between the cracks, where climbers were seemingly unprotectable, were left unscaled. This uncharted territory is the inherited domain of Lycra-clad sport climbers, the gymnastically

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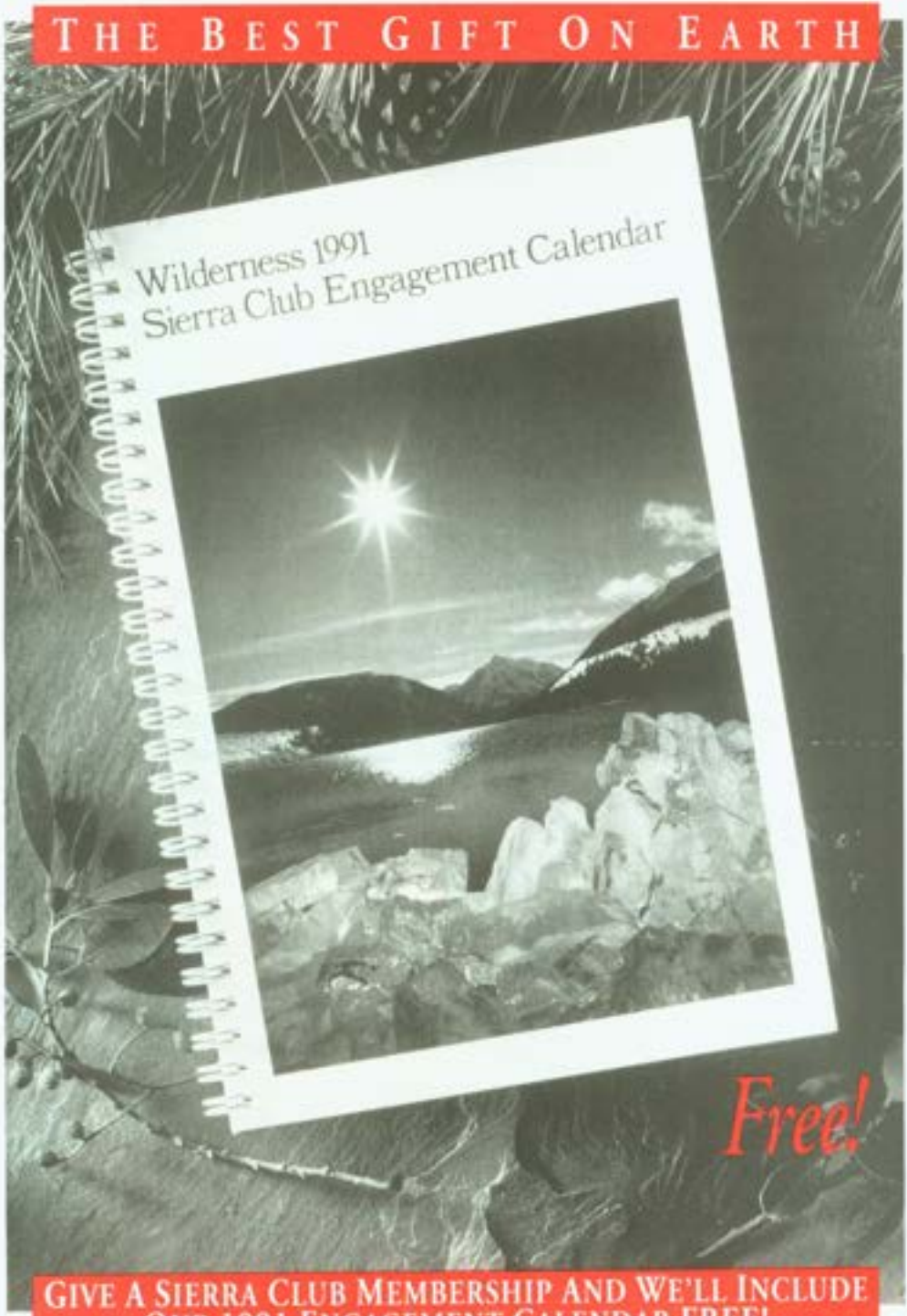

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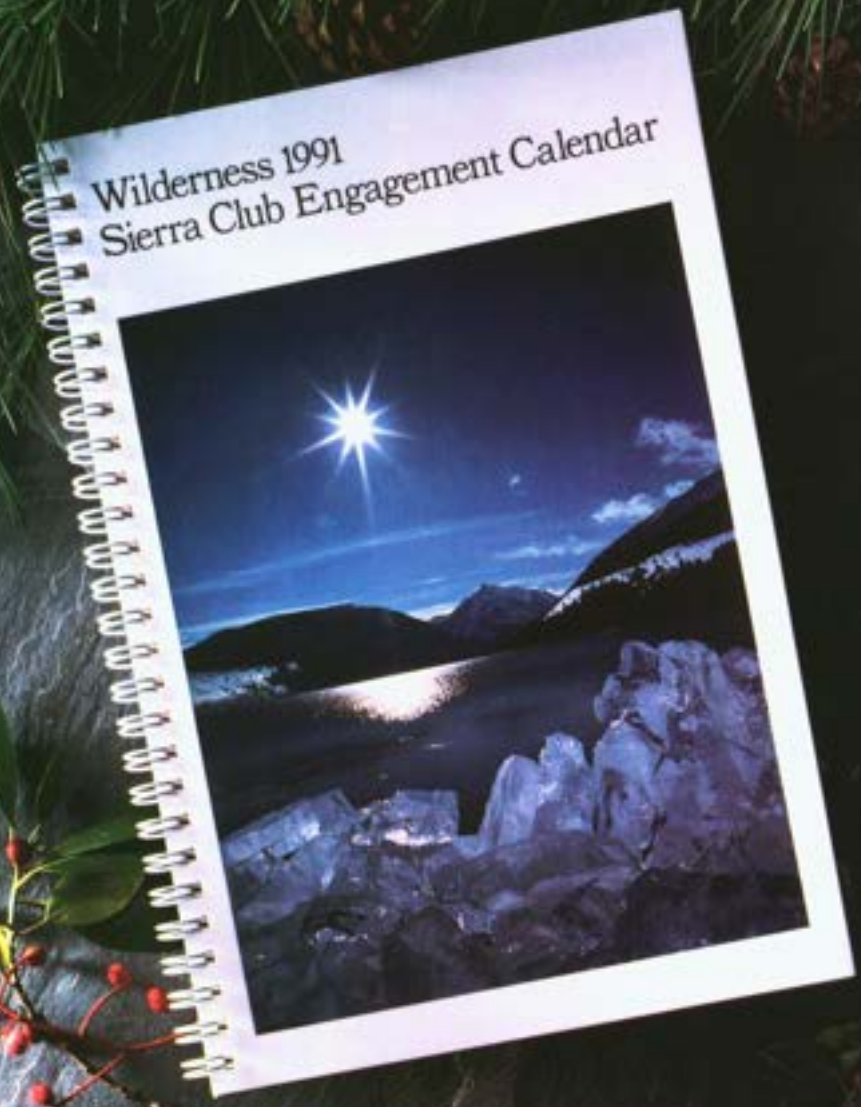

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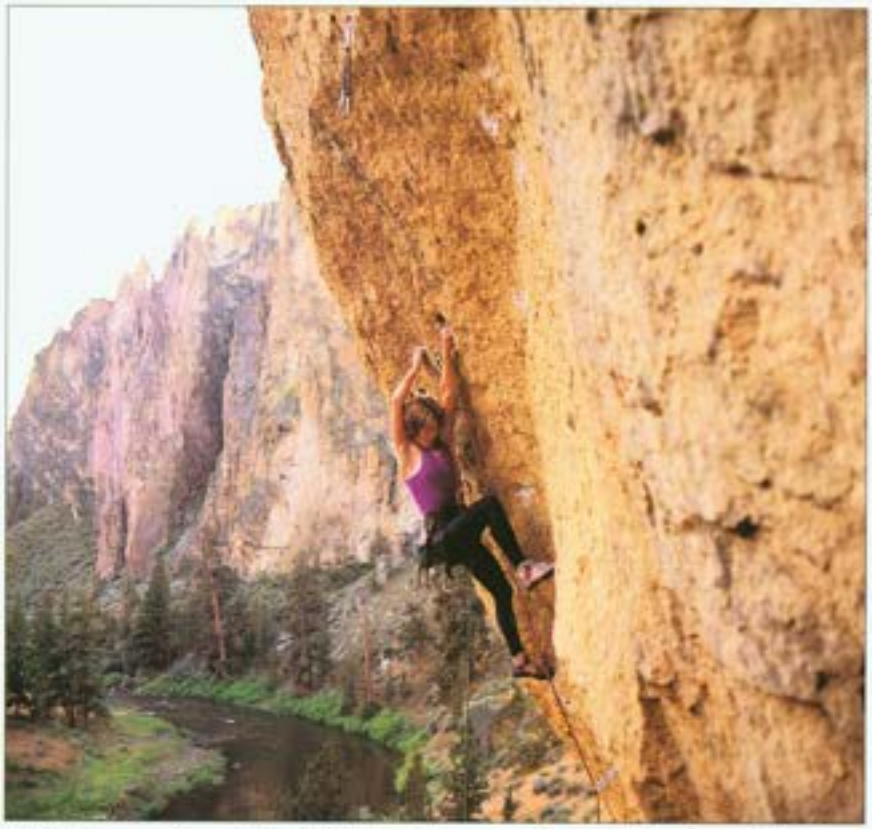

ANNE MARIE WEBER - TKO IMAGES

A bolted route at Oregon's Smith Rocks challenges world-class climber Lynn Hill.

trained rock pioneers of the 1990s.

But with no natural features allowing them to rig safety systems, these climbers resort to an unnatural safeguard: bolts. Unlike pitons—short metal wedges hammered into cracks—bolts are fixed anchors, hammered or twisted into specially drilled holes. While pitons are usually removed after the completion of a climb, bolts are left *in situ* for all to use. They were introduced to the United States by David Brower and the late Bestor Robinson during their legendary 1939 first ascent of Shiprock in New Mexico. The tradition in this country since then has been to use bolts only to ascend short sections of sheer rock face or to reinforce a main anchor.

In recent years, however, with the advent of national and international sport-climbing competitions and the proliferation of artificial climbing walls at colleges and gyms, the popularity of technical rock climbing has boomed. With as many as 150,000 technical climbers active in the United

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States, access to cliffs and the use of bolts, which were once considered inviolable rights, have become major issues at several climbing locales.

Officials of some state and national parks, worried that rock defacement and trail erosion will result from a great many climbers using a relatively small number of sites, have begun to formulate rock-climbing policy in their jurisdictions. In response many climbers have been policing themselves, while working through the American Alpine Club and other climbing associations to retain unrestricted access to their favorite haunts.

Much of the controversy over bolting has to do with how the bolts are placed; this issue has raised an ethical question among climbers themselves. In 1986, French climber Jean-Baptiste Tribout introduced to the United States the practice of placing protective devices—chiefly bolts—"from the top down" by means of a rappel rope. Before then, climbing ethics dictated that new climbs be established "from the ground up," meaning the necessary anchors would be placed by the lead climber as she or he navigated the face in a single, continuous effort from bottom to top. Yet the new climbs were so difficult that placing bolts on bottom-to-top climbs was all but impossible.

Enter the Bosch electric drill. In December 1986, American climbers Sean Olmstead and Chris Grover established the first route in North America where protection bolts were placed on rappel with the aid of a battery-powered drill. Their "electric rappel-bolted" climb at Smith Rocks in Oregon set a precedent, according to local climbing pioneer Alan Watts: "Instead of 30 minutes of backbreaking labor pounding on a manual drill in the hot sun, with the Bosch the task of placing a reliable bolt was reduced to about 30 seconds."

Soon people were using electric drills at other American climbing meccas, particularly at the easily accessible crags of Eldorado Canyon and the Flatirons in Colorado's Front Range. Several hundred new routes were forged up the hard, sandstone faces of the Flatirons between 1987 and 1989, most of them with bolts placed on rappel by means of power tools.

Conflict arose in nearby Boulder in 1989 when summer hikers on the Fern Canyon Trail complained to Boulder Mountain Parks rangers about the drone of motorized drills and the smears of white gym chalk, the unsightly metal bolt hangers, and the chain rappel-anchors that climbers had left behind. As a result, not only was the use of electric drills banned, but in October of that year BMP banned the placement of any fixed hardware, including bolts and pitons.

Two months later and ten miles south, the same regulations were adopted by Eldorado Canyon State Park. Notices were posted at both areas informing climbers of the new policies, but in neither case did officials convene public hearings on the new rules.

"Climbers certainly would have preferred to have the park officials work with them before adopting the new regulations," says Nancy Prichard, associate editor at *Rock and Ice* magazine in Boulder. "Instead, the officials acted in a hasty, short-sighted way. As a result, the whole bolting issue became overblown, and some bad feeling was stirred up. As it is, most bolts are located in very isolated places in the Flatirons that only climbers use and see."

For Jeffrey Hunt, writing in the Colorado Climbers Coalition newsletter, the issue poses a fundamental question of values: "By designating an area as a park, society sacrifices a certain amount of environmental protection to provide recreational opportunities for the public. . . . The main question becomes, 'How much adverse environmental impact can be tolerated before denying access to a particular group?'"

For BMP ranger and naturalist Ann Wichmann, however, the issue is clear-cut. "So many climbers are using the Flatirons and Eldorado Canyon now that the rules had to change," she explains. "One of our major mandates is

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to preserve Flatiron ecosystems, and if we hadn't stopped the bolting, today we'd probably have another thousand bolt routes and twice as much environmental trail damage. That's why we acted as quickly as we did.

"Climbers made a fatal mistake within a park system," adds Wichmann. "They brought too much attention to themselves."

Not all climbers were unhappy about the new rules. Many traditionalists saw their low-impact-climbing ethics upheld. Others were already taking matters into their own hands, "cleaning up the cliffs" as they called it, which meant conducting guerrilla raids to remove the bolts—chiseling them in half or pulling them out—on several popular climbing routes.

In contrast to the confrontations in Boulder, relations between rock climbers and rangers at Rocky Mountain National Park near Estes Park, Colorado, and at Smith Rocks State Park in Oregon have been noticeably more agreeable. At Rocky Mountain, officials have banned only the use of electric drills—not bolting itself—in accordance with their long-standing belief that motorized devices have no place in the backcountry areas of a national park.

"We've gotten nothing but cooperation from local climbers," says Jim Mack, the park's public-information officer. "They even discovered some cliffs where peregrine falcons were nesting and recommended that we close them during breeding season."

At Smith Rocks, says Alan Watts, "the increase in the number of new bolts in the last several years has been phenomenal," but at no time have climbers had to fear the park would consider closing down climbing. "In fact, we get along very well with the officials here." A ranger there agreed, and said the park has no restriction on the use of bolts.

Meanwhile, at two of the country's most popular winter-climbing locales, sport climbers have lost one round in the bolting debate and are hoping to win another. Bolting has been banned in Arizona's Superstition Wilderness, and officials at Southern California's Joshua Tree National Monument are drawing up a new climbing-management plan that will address the issue. In both instances, the American Alpine Club's Access Committee is working to see that what some rock climbers have called their "freedom of expression"—the right to place bolts in at least limited numbers—is reinstated or upheld.

Climbing boasts a long history of adherence to wilderness ethics, and most of today's young rock climbers pride themselves on their sensitivity to environmental concerns. One of traditional climbing's fundamental tenets is to leave no traces of one's passing. Can the old way and the new coexist? A fine equilibrium will have to be struck—but then, rock climbers usually have a good sense of balance.

ED WEBSTER, *a contributing editor of* Climbing *magazine, lives in Eldorado Springs, Colorado.*

WATER POLICY

The Stanislaus: A River Once More?

The New Melones Dam was a giant bathtub that swallowed up a classic stretch of whitewater. Now nature's pulled the plug.

Mary Abbott

WORD SPREAD quickly throughout California this past summer: "The Stan is back!" After eight years of lying submerged under hundreds of feet of reservoir water, the nine-mile-long upper canyon of the Stanislaus River once again saw the light of the sun.

Newspapers sent reporters to raft the revived whitewater in the foothills of the Sierra Nevada, and adventure articles soon appeared in San Francisco

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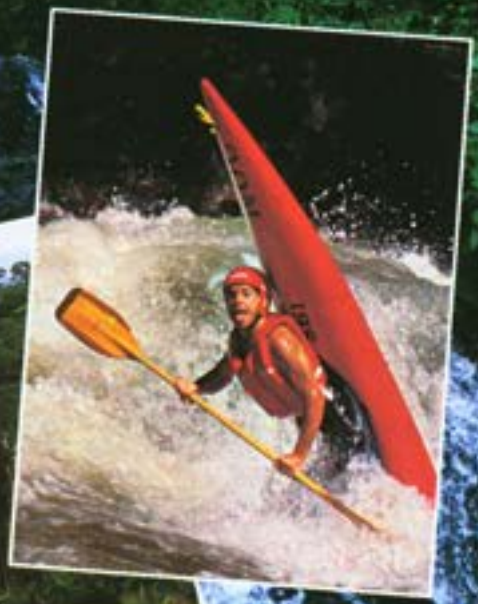

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National Tourist Bureau

and Los Angeles extolling the virtues of the Stanislaus' class-III+ rapids. Rafters who had loved those rapids returned, and commercial river runners' phones rang off the hook as people started booking trips on the Stan for the first time in almost a decade.

"The trees are dead, of course, and there is silt along the sides of the river, but the canyon is just as beautiful as ever," reported outfitter Robert Ferguson. "The limestone is spectacular. That's what made the Stanislaus unique among West Coast rivers."

The resurrection of the river, which symbolically took place at the beginning of the "environmental decade," was a result of California's four-year drought. Now the Stan's reappearance is causing a re-examination of the original issues that led to its death. Those who fought throughout the 1970s to save it are saying "We told you so," and those who supported the dam that drowned the Stanislaus (but who have seen little of its promise delivered) now admit, "We were betrayed."

First proposed in 1944 and funded by Congress in 1962, the 625-foot-tall New Melones Dam was completed by the U.S. Army Corps of Engineers in 1978. The dam, its advocates maintained, would provide surrounding counties with flood protection, power generation, water for irrigation and municipal use, enhanced fisheries, and recreation.

Opponents warned that New Melones was unlikely to deliver all that the Army Corps and the Bureau of Reclamation promised. Furthermore, they argued, the reservoir should be kept at a level that preserved the upper canyon until the water was needed. Interior Secretary Cecil Andrus decided against that option, and the Army Corps closed the floodgates in 1979. By 1982 the canyon was drowned.

The major selling point for filling the reservoir, the lure that won the hearts of bordering Calaveras and Tuolumne counties, was the promise of increased tourism. The Army Corps claimed that its 12,500-acre, 24-mile-long "lake" with 100 miles of shoreline would draw enough visitors to pump $1.5 million each year into the local economy. The Corps predicted 850,000 user-days a year initially, with an expected increase to about 3 million annually.

To back up its words, the Corps intended to invest $41 million in lakeside recreational facilities. The Corps' 1976 New Melones Lake Master Plan included two marinas with a total of 520 permanent boat slips, 11 recreation areas, 615 picnic sites, and 1,244 campsites. The Corps also proposed spending an additional $6 million on 16 riverbank parks—"The String of Pearls"—that would dot the river for 60 miles downstream from the dam. Finally, a new four-and-a-half-mile section of whitewater was to be created by regulated flows from New Melones. According to the government, these recreational benefits would mitigate the loss of the upper canyon.

Environmentalists and rafters argued that there were already 11 underutilized reservoirs located within 25

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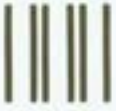

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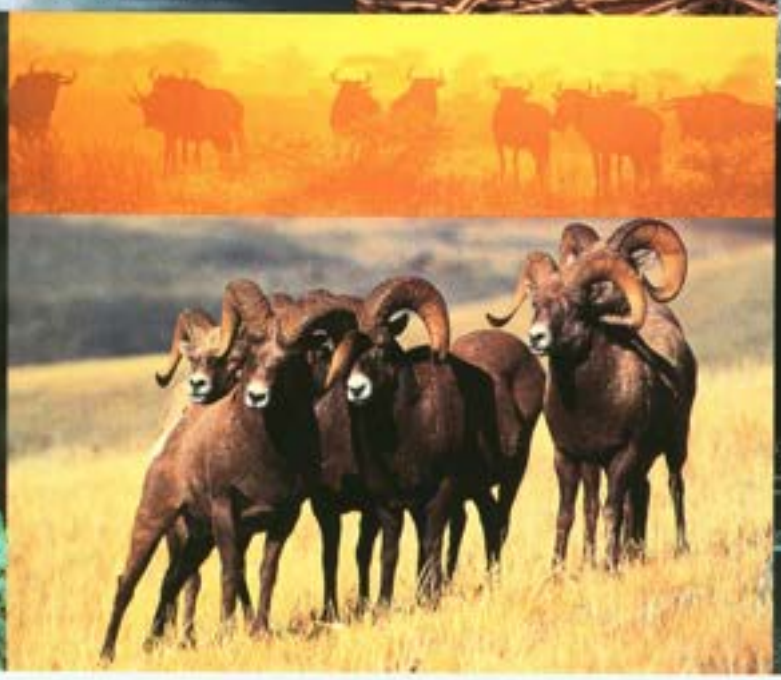

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When the floodgates closed, the upper Stanislaus River became New Melones Lake.

miles of New Melones. Meanwhile, they charged, the Corps failed to recognize the value of rafting in the upper canyon: The river was the most highly used section of whitewater west of the Mississippi.

No one on either side, however, expected what eventually came to undermine the plans for reservoir-oriented recreation. Shortly after Ronald Reagan took office in 1981, and before construction had begun, the federal government adopted a policy that required local governments to contribute 50 percent of the cost of new recreational facilities.

"Well, here we are, two very small rural counties. We can't afford these kinds of things," explains Leonard Baxter, executive manager of the Calaveras County Chamber of Commerce. "The two counties of origin agreed [to the reservoir] based on certain conditions. And then after it was all said and done, they said, 'Well, folks, we're going to change the rules of the game.' There is absolutely no question—we were betrayed."

In 1983 Congress finally appropriated about $22 million to construct a portion of the proposed facilities; another $2.5 million has been granted since then.

Today about 40 percent of the Corps' recreational dream has been fulfilled. On New Melones Lake are one marina with 150 boat slips, three developed recreation areas, 110 picnic sites, and 239 campsites. During 1987, the year of highest use, the Bureau of Reclamation recorded 631,550 visitor-days at the reservoir—significantly short of the lowest projections.

Four of the 16 String of Pearls parks are complete, with nine others minimally developed. These parks, administered by the Army Corps, recorded about 370,000 visitors in 1988. "All in all, when you look at the Master Plan versus what we have now, it's a drop in the bucket," says Baxter.

More than a few drops have gone into the turbines of New Melones, however, making good on at least one of the dam's promises. Since its construction, New Melones Dam has netted about $13 million per year from power production, and satisfied about one-quarter of one percent of California's energy demands.

The notion of a filled reservoir also appealed to local counties' thirst: At capacity, New Melones Dam can impound about 2.4 million acre-feet of water—more than 20 times that of the old Melones Dam it replaced. Significant though that sounds, subtract the 450,000 acre-feet of reservoir space kept empty for flood control, the minimum pool needed for power genera-

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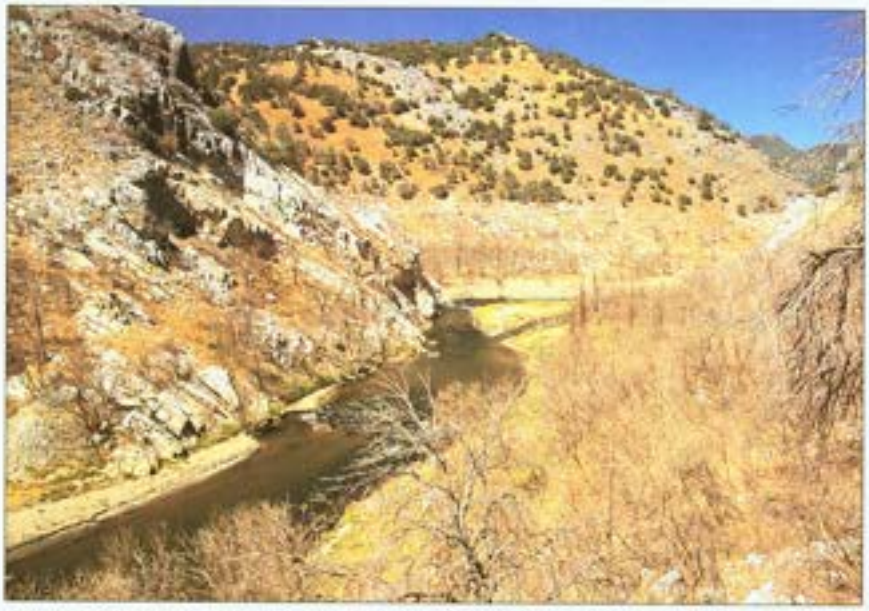

MARK LEDER-ADAMS, RAPID SHOOTERS

On the Stan again: Years of drought lower the reservoir and raise rafters' hopes.

tion, and all previous water rights, and New Melones actually provides only about 200,000 acre-feet of "new" water.

Once again, the dam's designated beneficiaries ran into a financial dilemma: The local counties could not afford to build water-conveyance facilities. In fact, since the reservoir was filled, only 1,586 acre-feet of "new" water has been sold for irrigation, and 175 acre-feet for municipal consumption. After a decade, the total return has been less than $8,000.

Hopes for an improved downstream fishery have been dashed as well. Not only did the dam fail to revive the Stanislaus' already dwindling salmon population, but in 1987–88 the California Department of Fish and Game had to purchase 45,000 acre-feet from the Bureau of Reclamation (at a cost of $330,000) to ensure that the river had enough water to support a returning fall run of chinook salmon.

"I was one of those guys who thought, 'By God, if you've got a dam, why not fill it?'" says downstream Modesto resident John Murphy. "I have since come to regret that." Today Murphy is an active member of a citizens' task force appointed by the Stanislaus County Board of Supervisors to promote instream fishery, wildlife, water quality, and recreational uses of New Melones water.

Back upstream, recognizing that they haven't exactly gotten what

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they'd bargained for, Tuolumne and Calaveras counties recently appointed a similar committee. The group's primary concern has been reservoir recreation, but the summer's influx of rafters bringing new life to local hotels and restaurants has not gone without notice. The value of rafting is now being discussed, something practically unheard of a decade ago.

"We certainly are talking about rafting, because it's very important," says Baxter, who represents the Calaveras Chamber of Commerce on the local task force. "I know there's a commitment by the rafters in this county and over in Tuolumne. They want to stay here and we want them to be here."

Talk such as Baxter's naturally raises the hopes of the activists who took part in the first battle to save the Stanislaus; these activists, however, are only cautiously optimistic.

"It's still painful for those of us who watched the river disappear," says Mark Dubois, who 11 years ago brought a temporary halt to the canyon's flooding by chaining himself to a rock in the face of rising reservoir waters. "When we discuss this today we shield our hearts. Yet we have to start with Glen Canyon, Hetch Hetchy, or the Stan. It's hard to dream high, but it's critical for this decade. We must determine if we humans have the capacity to embark on a journey of restoration and logic."

The river itself is not waiting for the human world to figure out what to do —it's beginning to live again. This year the upper canyon has become home for a pair of ospreys and at least one family of river otters. Willows are growing in abundance on the banks, and Rose Creek, a favorite rafter's rest stop, has nearly cleared itself of silt, and once again offers slippery, sparkling pools and water slides.

Looking down at a line of a dozen or so rafts along the Stan's banks, surrounded by the sounds of a gurgling creek and human laughter, it's hard to remember to shield your heart. ■

MARY ABBOTT *is a teacher and freelance writer in the San Francisco Bay Area.*

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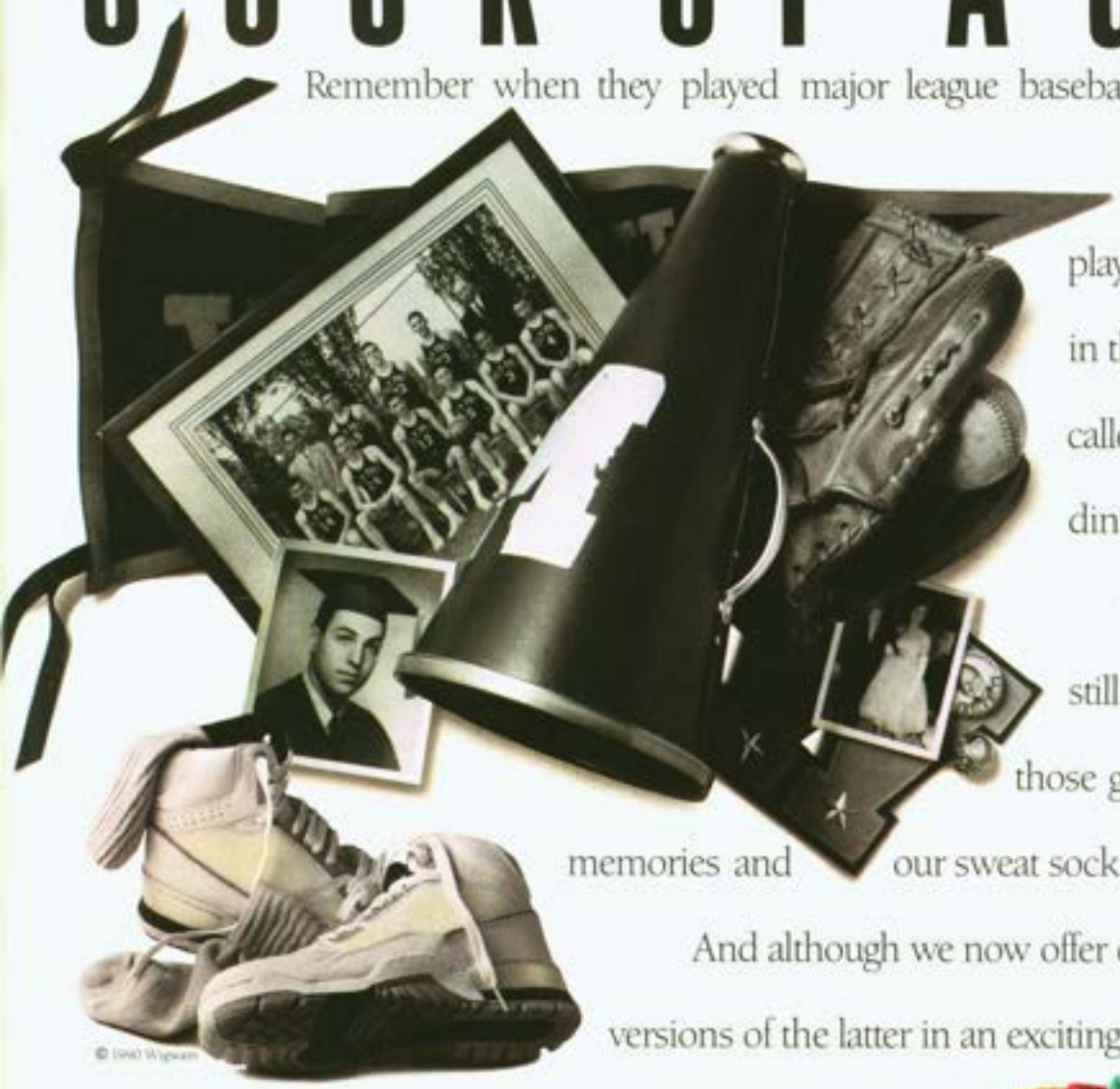

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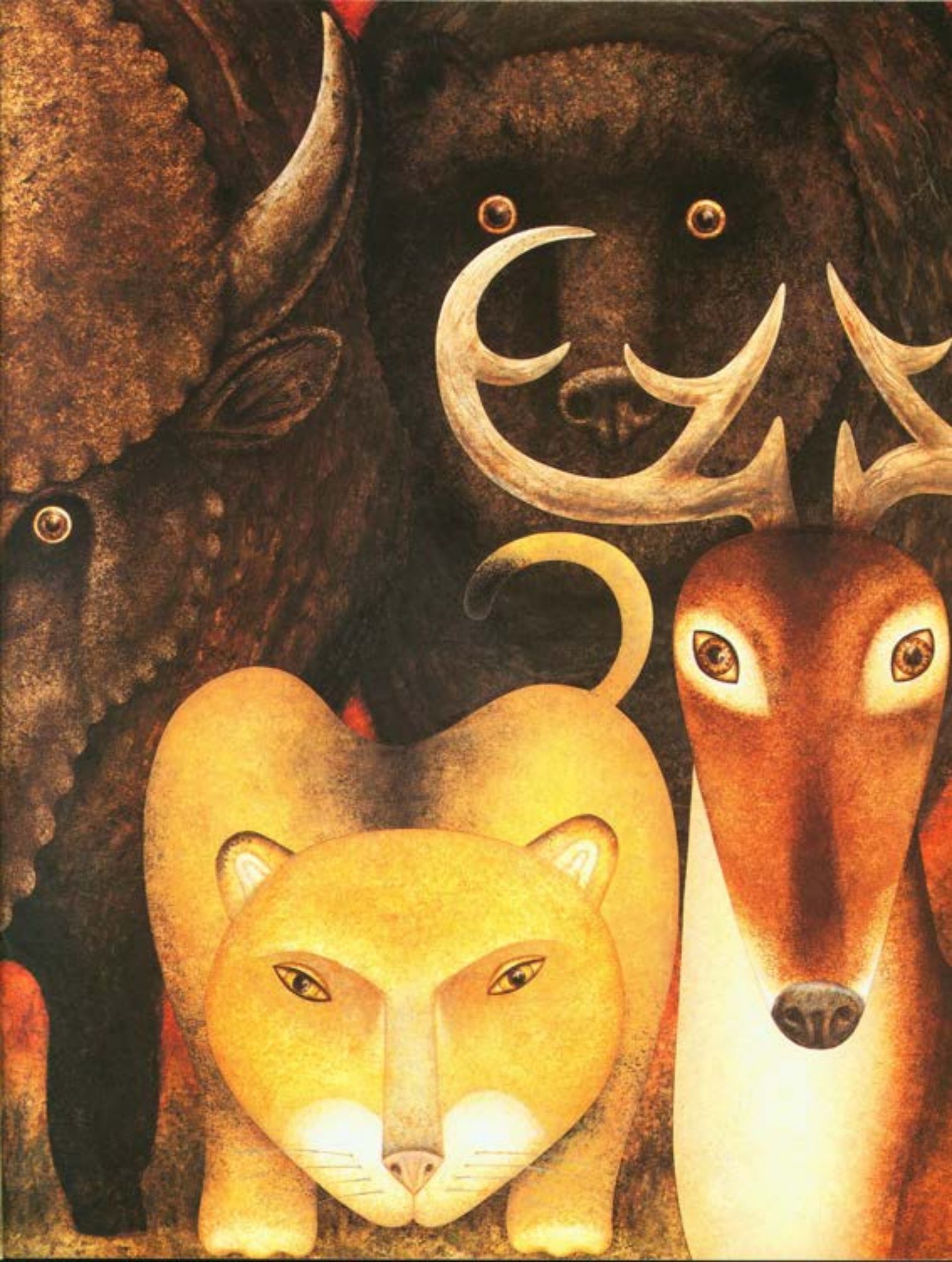
IN THE HEAT OF THE HUNT

THOSE WHO SHOOT ANIMALS—FOR FOOD OR FOR SPORT—FIND THEMSELVES UNDER THE GUN.

We thundered through Gallatin National Forest on a dozen snowmobiles—game wardens, officials of the U.S. Department of Agriculture, a TV crew, three men with high-powered rifles, and me. Our target was a herd of bison that had wandered out of Yellowstone National Park the night before; under Montana law, they were now fair game for lottery-picked hunters. When we found our prey, the great humpbacked beasts were grazing placidly on the frozen shores of Hebgen Lake. • Dan Jacobs, a 39-year-old air-ambulance nurse from Kalispell, Montana, slipped a cartridge the size of a lipstick into the breech of his rifle. The bison, brown and blond, shaggy and gorgeous in the morning light, just watched him. Jacobs ran his fingers thoughtfully through his bushy mustache and moved toward the animals, who responded by snorting great geysers of steam from their 12-gauge nostrils. • Jacobs strode closer and closer, to within 75 feet. The bison didn't budge. "I don't even call this a hunt. It's just a shoot," Jacobs whispered. "But that's what the old buffalo hunts were, too. In those days you sat up on a hill and shot as many as you could kill in a day." • Yes, this was an unusual "hunt." Most game animals don't stand waiting for the bullet. Most hunts don't require lottery-issued permits. And most hunters aren't accompanied by an entourage of biologists and journalists. • The biologists were there because

BY MARGARET L. KNOX
ILLUSTRATION BY BLAIR DRAWSON



WHY I HUNT

BY DAN SISSON

Hunting implies a relationship between man and animal, and as in any relationship, the layers of meaning that make it unique cannot be reduced to a single proposition or a simple-minded set of clichés.

Yet that is what has happened in the United States, where the debate between hunters and anti-hunters has been reduced to one question: How can anyone justify killing any animal?

As a hunter, I have felt hostility from people I know and respect who are anti-hunters. I have been told that killing any animal, except in self-defense, is immoral; and I have been characterized as a social leper who belongs to a more primitive age.

But this view of the hunter as an anachronism ignores the histories of science and of humankind. It conveniently blots out the fact that in nature every species, no matter how big or small, is either predator or prey, the hunter or the hunted. This—not the preservation of all life at any cost—is the dynamic of existence on our planet.

In all predator-prey relationships there is an inequality between the hunter and the hunted. The belief that all creatures have an equal right to life, and that therefore all killing is immoral, is a fallacy without precedent in science or the natural world.

The conviction of the anti-hunter that killing any animal is wrong may be based on the misguided concept that equality between hunter and hunted is the corollary of equality before the law. The equality of men and their right to life are *artificial* constructs of constitutional government and hold true only in the most civilized nations.

For me the essence of hunting is not the indulgence of the instinct to kill, nor is it to be found in the instant one kills. In fact, killing is no more necessary to a successful hunt than catching a fish is to a good fishing trip. If every hunt ended in a successful kill, hunting would be both boring and banal.

The essence of hunting for me is to pursue the animal ethically and in a manner that makes the possibility of killing or capturing it a genuine challenge. There is no certainty of killing when I hunt. Indeed, the *uncertainty* is what makes the sport interesting.

I accept limits on my ability to kill. The hunting seasons are carefully constructed so as to make the wit of the hunter and the cunning of the animal more truly competitive.

That is why we limit seasons to several days or weeks a year, limit the use of baits to lure unwary animals and birds, and limit the number of animals we kill, their size and age and sex. We limit our behavior by law in order to pursue game ethically and to make the challenge even more difficult. These odds I take on happily, knowing the elk herds will continue to flourish. Those who refuse to accept the odds—the poachers—are not hunters, they are outlaws.

Hunting is a complex activity involving undercurrents that are rarely articulated, but that nevertheless form the basis for one's actions. One of these unstated values is the attempt to establish a strong ethical position in life. Few activities in this world test ethical standards as does hunting.

There are no witnesses in the wilderness. The hunter knows in his conscience whether he has compromised the sportsman's standards. For an ethical hunter, hypocrisy and hunting are incompatible.

I have asserted that hunting involves much more than the act of killing. I hunt to nourish my aesthetic appreciation of nature; being in the field six months a year allows me to experience, personally, the most beautiful parts of America.

I hunt for food, and I do not choose to delegate my right to obtain it to a slaughterhouse. My friends go to supermarkets and buy packaged beef and lamb. I go into the wilderness and kill elk, venison, and wildfowl. Is there a moral difference between a cow being killed for market and a deer for my freezer?

I hunt because it deepens my relationship with my son. We have literally spent years in duck blinds, on deer stands, and around campfires—talking. I would not trade those conversations for anything on Earth.

MICHAEL O'LEARY / ALLSTOCK

I hunt because I can contribute to conservation directly. Last year I raised 5,000 valley quail. I killed 49 of them. This reflects a traditional value of giving more to the land and the environment than you take from it. How many anti-hunters can make a similar claim?

I hunt to simplify my life, away from the noise and the pollution of urban environments. What better way to ponder John Muir's axiom that every star is connected to every other star in the universe than by starlight after a day in the wilderness?

All this is why I hunt.

DAN SISSON, *a columnist for* Field & Stream, *lives in Bend, Oregon.*

they wanted DNA samples from a species that, though overflowing its designated habitat, numbers no more than several thousand. The USDA wanted to know how likely these animals were to spread disease to Montana's cattle. And the newspeople were along because the shoot had been a hot story since drought and the Yellowstone fires drove 569 bison into hunters' sights last year. Our expedition was part herd-management, part veterinary exercise, part media event. Jacobs was right: It was hardly a hunt at all.

Yet more and more these days, hunting is an exercise in scientific and bureaucratic wildlife management. A century after the closure of the frontier, wild animals are wedged into odd-shaped slivers of land between populated areas. State officials have decided that they must control their wildlife in order to placate ranchers and farmers and to protect the animals from mass starvation and speeding vehicles. And since a segment of the population likes to hunt (and is willing to pay for the privilege to do so), hunters have, by and large, been given the task of regulating wildlife numbers in the United States. We elect and appoint people to determine bag and creel limits and issue the right number of game tags to achieve calculated population goals. For better or worse, regulated hunting has become our nation's primary wildlife-management tool.

Not everyone is content with this state of affairs. The burgeoning animal-rights movement considers hunting an atrocity on a par with fur coats, vivisection, and veal. Careless and illegal hunters are stumbling into peoples' backyards, spoiling hiking trails, and endangering human lives. Many who believe in a hands-off approach to public lands are joining with traditional humane societies in demanding a ban on the "blood sport." Although mainstream conservation groups do not oppose hunting on principle, they are active against certain hunts and certain types of hunters.

Increasingly, a host of people who don't hunt want answers to a wide range of questions about hunting: Who should control wildlife policy, and what should their goals be? With wildlife habitats shrinking and more people visiting them, is hunting still appropriate? Is killing animals for sport morally acceptable?

Hunters have amassed mountains of statistics in their defense. They take credit for some truly astonishing recoveries by dwindling species: According to such pro-hunting groups as the Council for Wildlife Conservation and Education, hunters can be thanked for the fact that there are now 25 times as many elk and 40 times as many pronghorn antelope as there were in 1910. White-tailed deer have increased by almost 12 million since the turn of the century; even bison, all but extinct in 1900, number 6,000 today. Sport hunters supported the early restrictions on rapacious commercial hunting, and were among those who lobbied hard to set aside such treasures as Yellowstone National Park.

MANY ENVIRONMENTALISTS SAY THE DEBATE SHOULDN'T BE ABOUT WILDLIFE, BUT ABOUT ECOSYSTEMS. THINKING ABOUT ANIMALS AS A RESOURCE DOES FOR DEER WHAT THE TIMBER INDUSTRY HAS DONE FOR OLD-GROWTH FORESTS.

And from their pockets, hunters say, has come the money that fuels most state fish-and-wildlife departments. The Pittman-Robertson Act, which levies a federal tax on hunting licenses and guns, has poured some $1.7 billion since 1937 into researching wild animals and restoring their habitat.

"P-R," as the act is known among hunters, trained the first generation of wildlife managers, who became experts on everything from animal re-

WHY I DON'T HUNT

BY STEVE RUGGERI

Why did I hunt? From the time I was 12 until shortly after my 18th birthday, I pumped lead at the furred and feathered from Maine to Pennsylvania. I was the youngest member of the Newport Rifle Club in Rhode Island, where I was trained and disciplined as a small-bore competitive shooter. I was tutored by masters of the art, and I was given numerous opportunities to engage in my sport.

Despite my enthusiasm, I sought diversion from the rigors of competitive shooting. Trap and skeet shooting introduced me to moving targets, but I was anxious to sight down a barrel at animate ones. I looked forward to the pleasure of seeing birds plummet earthward. I knew I would delight in the contortions of small game, the end-over-end tumbling after the rabbit felt the sting of my .22. And I was confident that I would shrug and say, "Better luck, next buck," should I miscalculate shot placement and merely blow the lower jaw completely off a deer.

I didn't disappoint myself. I reveled in killing, maiming, bloodletting, and gutting. Never did I have the slightest thought regarding carrying capacity, overbrowsing, population dynamics, or any other game-management concept. The arguments that hunters advanced in defense of their sport were alien to me. I hunted in order to kill; I did not kill in order to have "the hunting experience."

Why did I stop? Social expedience: My pastime was deemed unacceptable by a circle of high-school mates from whom I sought acceptance. Would I have ever experienced an after-kill crisis of conscience of such emotional magnitude that I would hurl my weapon into the nearest lake? No. I was incapable of the visceral compunction that has triggered the moral rebirth of many who formerly exploited animals.

A couple of years after my guns had been silenced by peer pressure, I was dining on a hamburger so rare that the blood still appeared to be coursing through the animal tissue. While hurrying to finish so as not to be late for my cat's appointment with the vet, I was seized by the realization of how utterly inconsistent it was for me to be so solicitous of a cat, yet have no regard for the cow I was devouring.

Pain is pain, I reasoned, whether felt by the family feline or by the unknown steer shackled and hoisted above the killing-room floor. It became morally imperative for me to end my complicity in the infliction of any gratuitous pain and suffering

upon either wild or domesticated animals. This ethical awakening led to extensive research and reading that enlightened me further as to the magnitude of our exploitation of nonhuman animals, and reaffirmed my resolve to embrace an ethic of moral consideration for all animal species. I recognized that my decision to stop hunting years earlier had been correct, though made for the wrong reason.

Why don't I hunt? I could allude to the fruits of exhaustive research into the ecological and biological consequences of hunting, and to the collective insight of biologists, ecologists, and naturalists who challenge the prevailing wildlife-management dogma. Yet, fundamentally, the answer can be expressed in simple moral terms: Hunting is wrong, and should be acknowledged to be so not only by those who espouse the strict precepts of the animal-rights credo, but by those who hold a common sense of decency, respect, and justice. When we have exposed the specious reasoning of the hunters' apologists and stripped their sport of its counterfeit legitimacy, the naked brutality of hunting defines itself: killing for the fun of it.

Although my current occupation requires attention to a wide array of animal issues, the subject of hunting is the predominant focus of my work. If I find my energy or motivation waning during the course of a day's work, I merely conjure up the image of my former self as a slayer of wildlife. The memory of stalking targets on the hoof or wing infuses me with renewed vigor in my labor against blood sports.

But obviously, no amount of dedication or energy expended will atone for the suffering and death I visited upon the scores of animals I wantonly killed.

STEVE RUGGERI *is the U.S. wildlife-policy director of Friends of Animals in Newport, Rhode Island.*

stocking to pollution control. Pittman-Robertson funds have purchased more than 4 million acres of habitat for state wildlife agencies.

The Migratory Bird Conservation Act of 1929 and the Duck Stamp Act of 1934 mandated federal hunting fees that helped build a national system of wildlife refuges. According to the National Shooting Sports Foundation, hunting has garnered more than $5 billion in taxes and fees for conservation during this century.

Some animals are lucky enough to have entire organizations of hunters after them. Groups such as Whitetails Unlimited and the Elk Foundation have pooled millions to protect the habitat of their chosen target. Ducks Unlimited has bought 3.5 million acres of wetlands and raises $50 million a year to preserve waterfowl habitat. Where is this money going to come from, hunters ask, if their sport is abolished? New taxes aren't popular, and the income-tax form check-offs some states have initiated are inadequate.

"Habitat loss is the biggest threat to wildlife, and we're a habitat organization," says Kevin Lackey, conservation programs manager of the Rocky Mountain Elk Foundation, a hunters' group based in Missoula, Montana. "Even the vegetarian is partaking of food grown on wildlife habitat no longer available to wildlife—the corn we eat may have been planted in a former nesting site of wild birds." The Foundation recently purchased $8.7 million worth of elk habitat in three Montana counties.

"Here in Montana, we're extremely proud of what the American sportsman has done for both game and nongame species," said state Fish, Wildlife and Parks director K.L. Cool a month before the bison hunt at Hebgen Lake. "There is no anti-hunting movement in Montana."

"Hee-yah! Shoo! Hee-yah!" The yells seemed to rise from the forest itself. As Dan Jacobs cocked and raised his rifle that frozen morning, a dozen people on skis, snowshoes, and a snowmobile burst whooping and hollering from the surrounding woods. Jacobs gulped and lowered his rifle. As he watched in amazement, the people dashed between him and his target, spoiling his shot. They darted in among the bison, waving their arms, trying to drive the animals back to the safety of the park boundary. And they had words for Jacobs and the other two hunters: "Does this make you feel like a big, tough man?" "You ought to be ashamed of yourself!" "Leave these animals alone!"

Such protestors are the militant fringe of a larger group of Americans who believe that wild animals are in dire need of protection from the very game wardens charged with managing them, and that the notion of hunter-as-conservationist is specious at best. Steve Ruggeri, wildlife-policy director of Friends of Animals, scoffs at claims that wilderness is doomed without hunting. "Hunters are trying to woo conservationists, asking what we will do in lieu of Pittman-Robertson funds," Ruggeri says. "How about a tax on binoculars, or simply charging fees to enter a refuge and observe?"

Only 13 percent of Pittman-Robertson funds today are used to buy wildlife habitat, the pro-hunting Wildlife Management Institute concedes. About half of the money is now spent "developing" habitat—building ponds or waterholes, planting bushes to provide cover, moving animals around, building access roads or fences—what John F. Kullberg of the American Society for the Prevention of Cruelty to Animals calls "manipulating" the wildlands. The habitat of non-game animals is destroyed, says Kullberg, to allow proliferation of game species: Ducks Unlimited, for example, floods land for the benefit of its targets. Nongame animals such as wolves are either neglected and crowded out of their ancient homes or, like coyotes, shot by farmers or ranchers as "vermin."

Far from enhancing wild populations, says Ruggeri, sport hunting weakens them. Instead of taking the small, sick, or old animals as natural

WHY WE HUNT

BY HUMBERTO FONTOVA

Just once. My God, just once, I'd like to see hunters face up to the primal instinct that motivates us. But no, all I hear is:

"We're the top conservationists in the country."

"We put our money where our mouths are."

"We're nature lovers."

Hell, we'll pat ourselves on the back all day.

Yes, hunters are actually all these things. But no one (from our ranks, anyway) seems to want to point out that essentially we are killers of animals in the most direct way, and that what distinguishes us from everyone else who indirectly causes animals to die is that we take delight in it.

"Don't you eat meat?"

"How much did you contribute to conservation this year, Mr. Birdwatcher?"

Oh, how we love to retort to the anti-hunters. But they do have a point: If we're attracted by the beauty of nature, surely it's just as beautiful without a gun in hand. If the challenge is the key, why not sneak up on a bull elk and take a picture of it? If tradition and camaraderie are the inspiration, why pull the trigger?

And, of course, we all rush afield on opening day enraptured by the prospect of culling excess animals. The sleeplessness of the night before and the hollow stomach that morning are obviously caused by this opportunity to do our part for sound game-management.

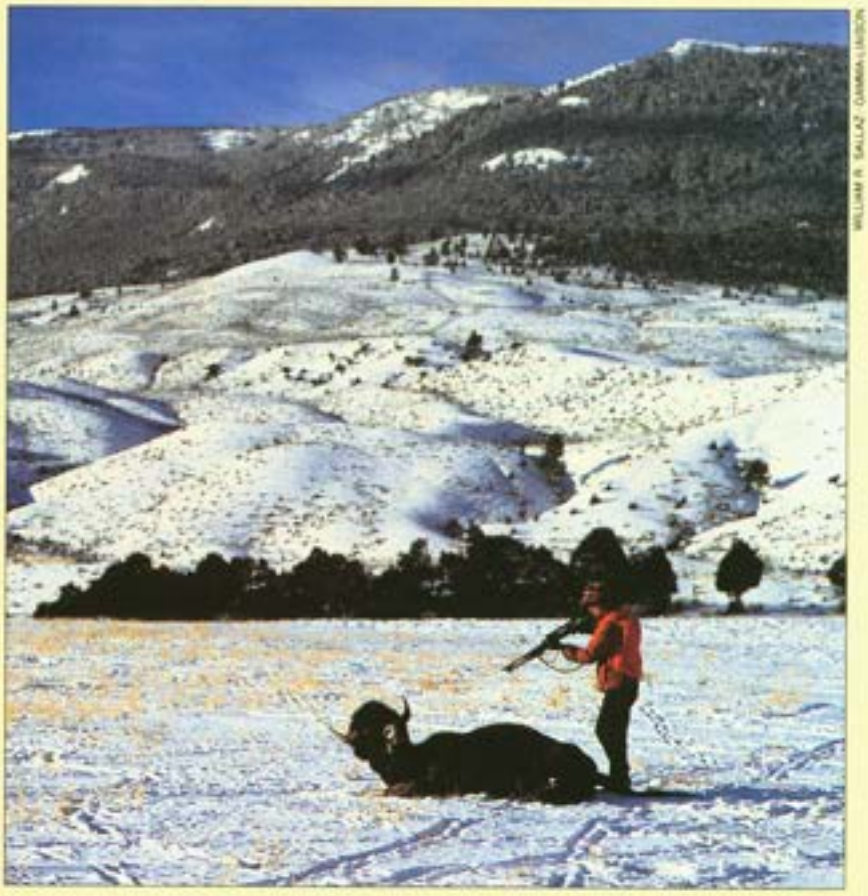
I've never bought the classic hunting argument about the insignificant part that actual killing plays in the sport. If this were true, there would be no reason for the vitriol we hurl at the anti-hunters. These mushheads aren't out to stop us from walking in the woods and embracing nature. They're not out to deny us the challenge of stalking an animal. They're not out to prevent the friendship and the card games at the cabin. They're out to stop one thing: the killing. If it's such a tiny part of the total hunting picture, why are we in such a lather about the anti-hunters?

Let's face it: After we cut through all the embellishments, the one thing that distinguishes a canoeing trip or a nature walk from the hunt is the prospect of killing.

We *like* to kill animals. I can no more explain this predatory instinct to the satisfaction of Friends of Animals than anyone else can. But I won't throw up a smokescreen of rationalizations when confronted with this unnerving but unavoidable fact.

For a hunter to admit that there's something enjoyable about killing an animal is considered fantastic. The outdoor magazines are a perfect example: Their editorials constantly harp on sportsmanship, challenge, conservation ethics, nature worship, tradition, and camaraderie. These are showcased as the most genuine rationales for our sport; the killing is merely incidental—the "We kill in order to have hunted" syndrome. According to these editorials, it's the grueling hours of scouting, stalking, and honing our woodsmanship that count. We're led to believe that only a small minority of slob hunters forsake these principles.

Then the rest of the magazine's pages are filled with stories of guided



WILLIAM R. SALLAZ / DAMBRA LIBSON

hunts where, almost literally, all the hunter does is pull the trigger.

After a night of good-timing, the biggest challenge for the Texas deer "hunter" is to huff and puff his way to the top of a deer tower and keep his balance on the revolving seat. The "hunting" is a matter of gazing out over the corn-baited landscape and picking out which deer he wants.

The tycoon who roams over the African bush in a Land Rover, gets out, walks 500 yards, and kills a 60-year-old animal pointed out by a professional guide is not out to stock his freezer or display his woodsmanship. I know that this gentleman, with what he paid for licenses and trophy fees, probably contributed more toward the conservation of elephants than any of the do-good organizations, but still, he killed the elephant. And he enjoyed it.

I see absolutely nothing wrong with any of these scenarios, but let's recognize them for what they aren't and for what they are. They do not show the behavior of the conservationist, adventurer, master woodsman, naturalist, or philosopher of hunting-magazine mythology. Hunters are simply guys who get a thrill out of killing animals.

Yes, the love of the outdoors contributes to my urge to hunt. The challenge is definitely part of it. Studying the nature of the terrain and my quarry's habits, and then ambushing him fair and square, makes the kill more rewarding. Sometimes the fellowship is nice, although I usually hunt alone. Feeding my family year-round on what I kill gives a certain bounce to the step. But mostly, I recognize the urge as a predatory instinct to kill. Man is a predator—has been for tens of thousands of years. It's going to take a while to breed that out of us, and thank God I won't be around by then.

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predators do, hunters prefer the prime bucks with trophy antlers. Kullberg believes the annual autumn deer "harvest" leaves thousands of weaned but inadequately socialized yearlings to fend for themselves, and that harassing animals in the fall—just when they should be putting on winter fat—makes them less prepared for the coming cold.

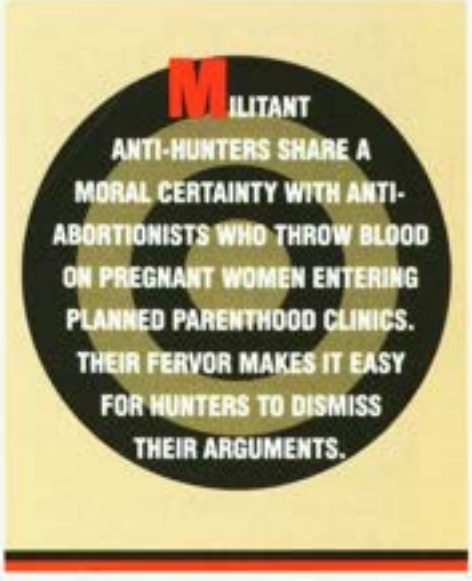
The whole idea of "shootable surplus populations" makes opponents of hunting wince. The "surplus" is the number of young animals added to the population each year that exceeds the carrying capacity of the land. But a 1956 study of ruffed grouse in Michigan, published by the North American Wildlife Conference, found about the same number of grouse during a six-year period in two populations—one extensively hunted, one completely protected.

Even college textbooks are questioning whether hunting is needed to control animal "overpopulation." "Hunting, by an outside species that does not form an integral part of an ecosystem, removes the food supply of predators, parasites, scavengers, and all other organisms that are in turn affected by these species," writes Raymond F. Dasmann of the University of California at Santa Cruz in *Wildlife Biology* (John Wiley & Sons, 1981). "Continued removal of such a 'surplus' changes the ecosystem."

I got a powerful lesson in hunting-oriented federal wildlife policy when I called the U.S. Fish and Wildlife Service with some questions about hunting statistics. The agency sent me a survey not of wildlife but of consumers. Its glossy 167-page report told all I'd need to know to sell a hunter a shotgun, a pair of rubber boots, or a room for the night. It told me how much hunters earn and how much they spend on food, lodging, transport, equipment, licenses, stamps, tags, permits, magazine subscriptions, and membership dues. Hunting and fishing, as of 1985—when the federal government last counted—was a $41.5-billion-a-year business.

To find out that hunters kill about 200 million animals a year, I had to turn to the Fund for Animals, which was glad to provide a complete casualty list: In the 1988–89 season 25 million rabbits, 4 million white-tailed deer, and 50 million mourning doves—among tens of millions of other birds and animals—were killed for sport.

The Fund for Animals is making wildlife-policy reform one of its main goals. "The issue for the 1990s is who should be setting wildlife policy—hunters or a more broadly defined group," says Wayne Pacelle, the Fund's national director. It is in this charge of lopsided management that hunting opponents find allies among mainstream conservation groups.



"We think lots of the justifications for hunting are weak ones, and too often exaggerated for commercial reasons," reads the official statement of the National Audubon Society. Nevertheless, the organization insists on "sound scientific information" before advocating tighter restrictions or closure of a particular hunt.

Many environmentalists say the debate shouldn't be about wildlife at all, but about entire ecosystems. Thinking about animals as a "resource," they say, does for deer what the timber industry has done for old-growth forests.

"We look at it from a biological standpoint," says Mark Palmer of the

IGUANA HUNT

BY DAVID SOBEL

On an undeveloped island in the southern Grenadines, where African traditions remain virtually intact, a visitor discovers that one culture's "blood sport" is another's natural rite.

The sun is already well past hot when I meet Lloyd and Hollie in front of Hollie's house at nine-thirty. The small, wood-frame house provides shelter for a family of eight in its three rooms. Beyond the house is an eroded wasteland of scrub and gullies that descends to sea-cliffs and beaches where children fish and collect sea eggs. But today we're heading up into the bush.

I have arranged to go iguana hunting with just these two boys, but others quickly materialize. Matthew shows up with his iguana gun, a gruesome, handmade weapon. They quickly decide we will forego the long-stick-with-a-noose-on-the-end strategy in favor of this more sophisticated device. The body is carved from a board; a long trigger made from a piece of bent iron serves to hold back a strap of taut black rubber cut from an inner tube. This strap propels a slender, sharpened metal spike at frightening velocity when released. I can barely manage enough strength to set the strap in firing position. A serious weapon.

I depart with five boys, ages ranging from 8 to 13. As we enter the bush, mostly scrub acacia and prickly pear, a tangy sage aroma fills the air. Three of the boys are barefoot; two are stripped to the waist, wearing only shredded cut-offs. Lloyd carries a cutlass that he uses to whack away at dense sections of undergrowth. Matthew carries an extra sling for his iguana gun, wrapped in a loose tourniquet around his left thigh.

"Sometimes the iguana live there," says Randy, pointing out a mass of dead prickly pear at the base of a healthy cactus. "Can find them sometimes in mapoo trees. They like the seeds—very sweet and very black."

"Can the iguana ever hurt you?" I ask.

"Yeah," says Lloyd. "When they full"—he means pregnant—"they lash you with they tails. Make ugly welts."

Despite the evident excitement, our pace is slow, almost casual. We stop to soak up the brisk easterly breeze and count the kites flying above the adjacent village. They talk about a bush house built near here by a few of the boys—a good place to sing songs, roast corn and cook peas, lie around and have nice fun. They don't spend the nights there, though. Too many dark places with trees creaking. Serpents sliding down the trees and jumbees taking shapes, like the shape of a big, long, tall cat, scaring them. Nice fun in the day, but too many spirits at night.

The top of the hill is cactus-bound, but with trees enough to provide good seats for all. This is a favorite spot of many boys in the village. Matthew often comes here alone just to sit and gaze. A newborn wild goat is found and passed around, cuddled in numerous arms. Micheal joins us; he heard of our hunt and followed us up from the village. He's 13 and an old hand in the bush, a valuable addition to the hunt. The boys tell stories and laugh. Matthew strikes a warrior pose, iguana gun slung across his chest, bathed in the breeze atop a twisted gommier tree.

We begin our descent. Before I reach the bottom of the gully, a high, keening whistle fills the air. The boys are whistling and climbing, chanting: "Two iguana, big ones, we gon' kill iguana." A large, ancient, white iguana scrabbles through the canopy of a broad-leafed juniper. Matthew climbs, trying to get in position to shoot while the others throw rocks, trying to keep the iguana stationary. "He run! He go fast." Before Matthew can get in position, the lizard scampers out of the top branches onto the cliff face and disappears out of view. Two boys climb to follow, but it's vanished.

They focus on the second one. Matthew takes aim carefully at the underbelly. "Gon' burst his belly, burst his belly," Lloyd calls gleefully. As the arrow pierces the tough skin, Lloyd's hand unconsciously goes to cover his crotch.

The lizard plummets, thrashing the branches. The arrow is driven up through its back, but it hits the ground running. Everyone takes off in chase. When I catch up, they are all panting. This one has gotten away, too. Disappointment is quickly submerged in storytelling. Hollie saw the white one first, then Lloyd the other. Micheal threw the first stone. Kenroy imitates the iguana's imperial glare. He rolls his eyes back in his head, and we can almost see the row of sawlike prickers rise on his sweaty back as he arches like the iguana.

We are interrupted by yells through the bush. Dane has spotted the white one again. The iguana manages to make its way, hopping from one tree to an adjacent one. Bad decision. This tree is much easier to climb. Matthew quickly assigns two boys to climb and another to wait underneath. The rest are to continue pelting the lizard with stones until the climbers are in position. A barrage of

rocks. "I mash it, I mash it!" they cry when they make a direct hit. "When he fall, I cutlass the throat." Micheal makes his way to the outer branches of the juniper. The rocks stop.

Micheal bounces on the limb the iguana rests on. The branch threatens to break with the violent bobbing up and down, but the iguana holds on tenaciously. Micheal inches forward and starts to beat on the iguana's head with a long branch. One club breaks, and Kenroy passes another, larger one. Micheal aims for the lizard's head and achieves a few direct blows. He starts chanting at the animal: "Listen to me, listen to me. I gon' kill you, iguana, gon' kill you. Bury you in the ground tomorrow afternoon at half past two, tomorrow afternoon at half past two."

DAVID SOBEL PHOTOS

The chanting confuses and fixates the iguana; it seems hypnotized. Micheal readies for another blow. The iguana starts to thrash its head, lose its hold. One more hit and it drops, pinballing through the branches.

Lloyd is positioned about ten feet from where it crashes to the ground. He smashes its head with a well-aimed stone. It jerks and spasms toward death while a few more rocks are thrown. The muscles in its long tail twitch for the next ten minutes.

The boys are jubilant. They marvel at its size, the biggest ever for some of them, and its unusual gray-white color. Very old, they agree. They examine the ticks on its neck, its long curved claws, its stegosaurian back. They are respectful and proud.

Matthew ties the tail in a knot so the lizard can be easily carried home to skin and cook for dinner. Tail included, the iguana is almost six feet long. Lloyd leads us down out of the big trees into steep, eroded pastureland. The smell of sage fills the air again as the boys walk quietly, easily. Overhead, kites buzz in the trade winds. At the base of the slope, I arrange a group picture. They throw their arms around each other's shoulders and stretch the iguana in front of them. Smiles all around, deep satisfaction. A good hunt.

DAVID SOBEL *is a professor of education at the Antioch New England Graduate School in Keene, New Hampshire.*

Sierra Club's Wildlife Committee. "Where there are significant biological problems with sport hunting, the Sierra Club will oppose it." The Club also opposes hunting in national parks or for purposes of predator control, and helped write California's Proposition 117, approved by voters this June, which bans mountain-lion trophy hunting. Only 5 percent of Sierra Club members hunt (compared with 8.2 percent of the general population), but the organization firmly declines to condemn hunting as a whole. "As far as run-of-the-mill sport hunting goes," says Palmer, "we have no objection."

Likewise, Defenders of Wildlife has opposed the hunting of sandhill cranes where they can be confused with whooping cranes, and of tundra swans where they can be mistaken for trumpeter swans, but the group is "neither anti-hunting nor pro-hunting," according to a policy statement.

Even so, hunters have roasted environmental organizations for such stands as Defenders of Wildlife's opposition to the export of bobcat pelts, and have been consistently hostile to conservationists' efforts to strengthen the Endangered Species Act. Hunting has become so contentious that pro-hunting groups sometimes resist any restrictions on the sport—even mild, innocuous ones—as furiously as the National Rifle Association opposes handgun waiting periods or a ban on assault rifles.

While traditional conservation groups will concern themselves with endangered species and biological diversity, animal-rights activists speak in terms of the trauma, suffering, and death of individual animals. This year on Earth Day, a banner hoisted on a mountain at the end of my street read: "Thou shalt abandon all biases based on race, sex, nation of origin, religion, species, or intelligence."

Sport hunting shows an outdated bias in favor of our own species, Stephen Clark argues in *The Moral Status of Animals* (Oxford University Press, 1984), and it nurtures aggressive, violent instincts best outgrown. Just because a creature can't talk, Clark says,

does not mean it is a "lesser" beast subject to our whims. Animal-rights activists who accept the need to control wildlife populations advocate such "humane" methods as contraception, relocation, or the re-introduction of four-legged predators.

Some anti-hunting activists lobby, some march, and growing numbers run around in the woods with bullhorns, scattering fauna ahead of the armed menace. Officials in Connecticut barred hunting in a wildfowl refuge in 1987 after an angry hunter fired his shotgun toward a group of protestors. "It's manslaughter waiting to happen," wrote Oregon hunter Dan Sisson, a *Field & Stream* columnist. "This is not an argument that lends itself to measured negotiations."

THE DOE'S INNARDS WARMED MY HANDS, AND WHILE I WORKED THROUGH THE DAY, GUTTING HER, HAULING HER HOME, BUTCHERING LABORIOUSLY, AND, FINALLY, TASTING THE GRILLED MEAT, I BEGAN TO FEEL— CORNY AS IT MAY SOUND— REDEEMED.

His warning came to mind when the bison herd at Hebgen Lake panicked. I was preoccupied, listening to a young woman loudly impugn the size of the hunters' genitalia and watching a Montana game warden slyly snatch the keys out of the protestors' untended snowmobile. When I looked up, 30 tons of enraged, horny-headed bison were charging my way. The three pepped-up hunters careened back and forth in search of an unobstructed shot. "Stand back! Get out of the way!" hollered a game warden. Jacobs wheeled, aimed at a bison cow that had been cut from the herd, and fired.

Steaming blood spurted from the stricken beast's heart. A young woman began sobbing, and Lee Dessaux, a 25-year-old with eyebrows shaved eerily into tiger stripes, flailed at Jacobs with a ski pole.

"Why'd you do it?" Dessaux yelled.

"Murderer!" cried the woman.

"Stop hitting me!" said Jacobs, and then, piteously, "You don't care about animals! I'll bet you haven't even heard of the Pittman-Robertson Act!"

Up the bluff, a game warden tackled a protestor and was in turn sent sprawling by a hefty woman in a fringed shawl. More shots sounded, and two more bison stumbled to their deaths. The woman in the shawl dipped her hand in blood, smeared it on a hunter's face and hissed, "The war is on."

Indeed. Dessaux was later charged with assault, and another protestor was booked under the state law against hunter harassment. (Montana is one of 35 states to have such a law; U.S. Representative Ron Marlenee [R-Montana] has introduced a bill in Congress that would allow civil suits against anyone interfering with a lawful hunt on federal land.)

After the melee, I asked Dessaux what possessed him to attack a man who was holding a smoking rifle.

"I'd die to save an animal," said Dessaux, a member of Santa Cruz, California's Hunt Saboteurs. "Writing your congressman isn't effective. And poking that guy with a pole was nothing compared to what happened to the bison."

Such reasoning makes hunters foam at the mouth. "It is difficult to fathom a mind that equates a human with an animal," fumes a statement circulated by the Wildlife Legislative Fund of America. "What animal? A chimp? A rat? A cockroach? Where does the animal-rights mob draw the line?"

In fact, anti-hunting activists aren't the only ones who object to taking animal life. An Indian friend of mine is a member of the venerable Jain sect; he eschews meat, eggs, and leather, and begs his god's pardon for every insect he inadvertently kills. Many vegetarians choose their diet for perfectly respectable spiritual reasons. What the hunters really don't like is having someone else's philosophy foisted on them. Militant anti-hunters share a moral certainty with anti-abortionists who throw blood on pregnant women entering Planned Parenthood clinics. The quasi-religious fervor of many animal-rights activists makes it easy for hunters to dismiss their arguments.

Militants are not alone in their anger against hunters. There are plenty of folks apolitical enough to wear leather shoes and eat cheeseburgers who nevertheless don't like it when they have to think about dodging bullets on their favorite hiking trail between Halloween and Thanksgiving. Maine housewife Karen Wood took a .30-06 slug in the lung and died in her own backyard last year when a hunter mistook her white mittens for a fleeing white-tailed buck. The *Bangor Daily News* blamed her for not wearing blaze-orange, and a grand jury in that pro-hunting region refused to indict the hunter. Such callousness by the hunting community probably creates as many anti-hunting converts as any animal-rights propaganda.

And then there are the "slob" hunters. A neighbor of mine routinely finds deer and even cattle slaughtered and left to rot on her ranch. Too many hunters are out merely for kicks, like the three youths who told law officers they shot 40 deer north of Kalispell recently "just for fun." Studies by state wildlife agencies in Missouri, Washington, and New Mexico show more animals are killed illegally than legally. The old fair-chase laws against shooting from a vehicle, using spotlights after dark, and leaving salt licks or bait are increasingly ignored, believes Joel Scrafford, a senior agent with the U.S. Fish and Wildlife Service. "A lot of hunters now are into the macho image and equate success with whether or not they kill," Scrafford says. "We're seeing fewer and fewer hunters raised in a rural environment where they grew up with an appreciation of just being outdoors among wildlife." High-tech, motorized stalking meth-

ods degrade hunting: In North Carolina, people who call themselves sportsmen drive around in pickups until their radio-collared dogs lead them to a treed bear. Lots of legal but dubiously ethical hunters shoot their prey within a few hundred feet of their cars. And bow hunters who refuse to use a poison that would kill quickly and surely fuel accusations that the sport is unnecessarily cruel.

Although some Pittman-Robertson funds are already set aside for teaching gun safety, hunting could be better regulated. We don't let people drive without a driver-education course that culminates in both a written and a practical test; why not take similar precautions nationwide before putting deadly weapons in hunters' hands? Responsible hunters spend time learning the rules and practicing their marksmanship; none should object to tougher licensing, and many have told me they would not.

Plenty of hunters I know will go out for a week without seeing an animal they want to kill, and consider the time well spent. But abolitionists have a point when they accuse hunters of dodging the essence of their sport. For hunters, it is the potential kill that gives meaning to the stalking, the waiting, the time in the forest. You don't need a lethal weapon to enjoy a day in the woods. Unless you're a subsistence hunter, meat can be bought for less than the cost of a hunting trip. Jogging is better exercise. Identifying flowers is just as good a way of bonding with friends.

I've hunted only once, and I doubt if anything but a predator's awareness could have induced me to sit so quietly in an icy pre-dawn forest for so long. As I sat motionless (deer see only movement), the forest loomed larger than ever; oak leaves seemed to crash to the ground around me. Dawn came with a hosannah of bird calls, and soon I could feel myself melting, calm and alert, into the mottled tapestry of the pungent woods. My feet were asleep and my hands numb by the time a doe appeared across a stream, halting, twitching her ears, looking out for danger.

My rifle crept to my shoulder. My pounding heart drove the sight in a circle around the doe's heart. Aeons passed before I steadied the barrel and fired. She flinched, ran a few steps, and collapsed. As I approached to deliver the last shot, her brown eyes glazed with mute reproach. I barely felt the kick or heard the roar of the rifle this time, but I turned cold suddenly as I bent to make the first incision.

The doe's innards warmed my hands, and while I worked through the day, gutting her, hauling her home, skinning her carefully, butchering laboriously, and, finally, tasting the grilled meat, I began to feel—corny as it may sound—redeemed. Part of what makes hunting such an intensely emotional experience is the physical responsibility you take for the death of your food.

I don't know if I could do it again, but at the risk of being splashed with red paint, I will say that for some perfectly sane, law-abiding people, hunting instills the same awe and respect for nature that others might feel scaling a glacier or surfing the aftermath of a Pacific storm. Hunting takes us out of the world of telephones, fluorescent lights, and bus exhaust into a primal world where, yes, the drama of the kill, the smell of the prey, and the feel of warm blood help restore our sense of belonging to nature.

The animal-rights activists are right, too, though, when they argue that individual animals are as worthy of respect as rare species or "biotic communities." We are the only species on Earth that can choose whether and when to be predators—and most people choose not to hunt.

One day this summer an elk cow bounded across a trail in front of me and then, strangely, poked her head back out of a shimmering aspen grove. She cocked an ear and pretty soon my mystery was solved: Two sturdy elk calves trotted across and vanished into the woods after their mother. I was glad it was only June and the woods weren't full of hunters; the elk and I could enjoy each other as harmless equals. ■

CHARLES KREBS / ALLSTOCK

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Animalisms

THE WINNERS of SIERRA'S 1990 NATURE-WRITING CONTEST

The Bear's Wife

BY LYNNE BAMA

The path goes up a rocky slope, then levels off a few yards below the waterfall. As I reach this place on the trail, my eye rises above a feathery late-summer tangle of wild raspberry, cow parsnip, and mountain hollyhock. In the afternoon shadow on the talus slope to my left, something is moving.

There's no moment of hesitation for me, no need to consult the field guide. Dished face, humped shoulders, silvery fur: a classic grizzly. How far away? Not far enough, and moving in my direction in an easy, loose-jointed walk. It hasn't noticed me.

One step backward, and I am out of its sight. The wind is blowing my scent away from the bear, the noise of the waterfall masks my footsteps. I whirl and run.

All the way down the slope the hairs on the back of my neck prickle and rise with a life of their own, my feet skim the blocks of stone with the effortlessness of terror.

My husband and son look up in astonishment as I come flying down the mountain. "Quick, get in the car," I gasp. "It's a grizzly."

Safe behind the windshield, we wait. A moment passes. Then a great head appears at the top of the trail, just above where I had stopped. The bear comes into full view, still moving in a leisurely fashion. He pauses to eat a cow parsnip

ILLUSTRATIONS BY ANTHONY RUSSO

leaf, which flaps like the wings of a frightened bird as it goes into his mouth.

Another step or two, and he reaches my scent on the path. Instantly he stops, then rises on his hind legs, face searching the breeze. For a long moment he towers there, hesitant, then makes a sharp turn. He crosses in front of the falls and goes up the cliff beside them, moving neither quickly nor slowly, but with the inevitable, faultless grace of flowing water.

As he vanishes into the forest, I am grateful that a potentially dangerous encounter has been avoided. The bear, I calculate, could have covered the original space between us in four or five seconds; if I had come up the path only a moment or two later, we might have met face to face at a distance of something like 15 feet.

My feeling, though, runs deeper. It was an honor, I realize, to have seen him, unaware and at ease in his own setting.

But I am also haunted by a sense of regret, of loss, of ineptitude. What do you do when you meet a grizzly? Some of the recommended tactics—drop your pack to stall for time, play dead, climb a tree—not only fail to take into account the violent emotions involved, but seem somehow inadequate, inappropriate gestures before the awesome presence of Bear.

There were at one time definite codes of behavior for such situations. A member of the Ket tribe of western Siberia might have said, "Go away, Old Man, I'm not guilty." (Indigenous peoples of the Northern Hemisphere never said "bear"; such a usage was both disrespectful and dangerous, since bears were believed to understand everything humans said.) A Cree woman would have known to avert her eyes, while one of the Koyukon women of Alaska would have uncovered her genitals and said, "My husband, it's me."

But I had met Bear and fled in panic. Not only that, but one whiff of my scent had been enough to turn him away.

Things had once been different between us. In another dusk, a long time ago, a girl gathering berries stepped in some bear dung and made a disparaging remark about old "Fat Foot." Soon the strap on her carrying basket broke, and broke again, until her companions had to leave her behind.

Suddenly two dark young men appeared out of the brush. Offering to help her, they led her to a house high on the mountainside where she realized, too late, that she was among the Bear People. They would let her live, they said, if she married one of them. Already she noticed the fur of her cloak growing longer.

With her Bear husband she had two children, half human, half bear. One day she heard her human brothers walking below, and rolled a snowball down the mountain to attract their attention.

Bear Father, knowing he must die, told her the songs that should be sung over his body if men wanted to continue hunting bears. After his death, Bear Mother and her two sons returned in honor to the village.

Bear Mother thus became the intermediary between two worlds. And she paid for that transaction with her pain—the

pain, perhaps, of that dark embrace, of rough children clawing and biting her nipples, and, finally, the pain of loss. A Haida carving shows the Bear husband clinging to her in a last pathetic embrace as her brother spears him.

What feelings could there have been between them? Hers must have been extraordinarily complex—a frightening attraction to this most man-like of beasts, coupled with the awe of an animal who was man's superior in that wilderness world, an expert botanist who could kill a musk-ox with a single blow, and avoid winter by dying and coming back to life each year. But she never forgot where she had come from. Perhaps she always knew she would betray him.

Not long after I saw the bear, I dreamed that the valley where I live, some 30 miles from the waterfall, had been swept clean of its houses, fences, powerlines, and roads. It was late autumn, and the silence as the land waited for snow was immense. There was only the sound of waterfowl flying overhead, and wind whispering in the deep grasses that must have been here a hundred years ago, before the cattle were brought in.

My house seemed to be sinking into the ground, hunkering down for a long winter, when the white bear arrived. Though he came from the north, he was no long-shanked, Roman-nosed polar bear, but a white grizzly, a magical beast. Monumentally gracious and un-shy, he came into the yard and waited, and I walked up to him and hesitantly touched his shimmering fur.

And as though that gesture had broken some barrier, released them from an ancient bondage, bears of all sizes and kinds came from every direction, digging their dens along the hill behind the house.

(I remembered then the old tales of the scratching sound heard at the cottage window furred with cold, the muffled tramplings in the deep snow. At the opened door, a huge, hairy, supplicating muzzle sniffs the warmth. "Let me in, I mean you no harm." Bringing riches to the house that welcomes him, he goes off with the youngest, most beautiful daughter on his back, her long, golden hair trailing into his fur, the forest dark before them. At night, in her bed, he is, after all, a man.)

Eventually, inevitably, I am drawn back to the waterfall. Though it is early summer only a few miles away, here deep snow is still draped across the cliff; the veils of falling water stitch through its rotting remains.

In the rock crumble along the shore of the lake below, last year's grasses are strewn like drowned hair. A cold wind ruffles the strip of dark water not covered with spongy gray ice, and a jay scolds from a nearby spruce.

Why have I come back? As though the bear were still here, would always be here, waiting for me to relive that moment when I met him and did not know what to say.

Things have not turned out well between us. As centuries passed, Bear Mother's story was slowly eclipsed by the exploits of her sons (who gradually became more and more human, less and less bear), the straightforward heroics of the hunt, the ritual, and the propitiation of the dead bear's soul.

Then, as the shamans began to gather power, sacrament became sacrifice; the bears were chained and clumsy. The old vision of ursine powers faded, became a medieval symbol of lust and sloth. Then the dancing bear of the circuses, and finally the oafish, stumbling presence of Delmore Schwartz's poem "The Heavy Bear Who Goes With Me," symbol of man's shadow side, fatally Other.

Had we ever really understood what it was all about? For the Paleolithic men who killed the animal, then asked for forgiveness, the story took place in the light of day. But Bear Mother's tale unfolds in the shadows of the psyche, a parable of the wilderness realm of the self, the creature of the forest that lives in each of us, both bestial and sublime.

I stand here in the chill, remembering how the fur on the bear's shoulders, rippling as it went up the cliff, still held a faded shimmer. And for an instant the taste of homesickness comes into my mouth as sharp as salt.

I want to call out, to both the sleeper in that cave of dreams and the real animal, to frame some expression of gratitude for what has been between us, some hope for his future, perhaps in the words of the ancient *Kalevala*'s prayer to a bear:

O my Otso, O my darling,
Fair one with the paws of honey,
Do thou rest in hilly country,
And among the rocks so lovely,
Where the pines above are waving,
And the firs below are rustling.

We shall never treat thee evil,
Thou shalt dwell in peace and plenty,
Thou shalt feed on milk and honey . . .

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The Swamp

BY SHEILA ROBERTS

I used to think that entire civilizations lived in the specks of dust that floated and sparkled in a sunbeam, and that I was part of the blood of an animal so large I couldn't perceive even the walls of the vessels that channeled my flow. I could have told you there was a difference between my body and a tree or a rock, but I didn't feel it in the same way I do now. The world was there to poke at and learn about, and there was no question about my right to do that. I bartered this childish curiosity rather late, for the usual price: a little knowledge and power.

In those days, my sister and I lived with our parents in a rural neighborhood tavern on the Flathead, Salish, and Kootenay Reservation in western Montana. Marilyn and I spent summers in the cattail swamp just down the road, between our house and the Campbells' sheep ranch. Every spring we watched and listened to the blackbirds battle for nesting sites near the center of the swamp. There, a more or less permanent pool of shallow, stagnant water and deep, soft mud created a safe zone that protected the eggs and baby birds. Marilyn and I weren't sure what went on out in the middle of the swamp, but assumed it was much like what we saw in the nests near the edge. Tucked between some of the old, dried cattails and the new growth were nests filled with brown-flecked, light-blue eggs. Most of the nests were too high for us to see into without disturbing, but a few, perhaps built by novice nesters, were low.

Uncle Gideon warned us not to touch the eggs; he said the parents would abandon their nests if they smelled us. Once, I washed my hands carefully, ran to the swamp, held an egg for a moment, and gently put it back. I felt so guilty I couldn't go back to the nest for a long time. When I did, there was nothing in it except a few bits of shell and feathers, which left me hope that everything had turned out all right.

We saw baby birds, too. They were shockingly ugly, even worse than the newborn cousin I viewed once in the hospital nursery. The birds had monstrous yellow-beaked mouths, grossly oversized feet, and sometimes a few randomly placed grownup feathers sprouting awkwardly out of the short down. The big clawed feet were everywhere, and the babies stepped on each other's heads as they squirmed around in the nest. Nevertheless, everything impossibly small was fascinating and magical; I longed to pick one up and cuddle it to my face, but Grandma said it would think I was trying to eat it and die of fright.

Nearly everything important happened when we weren't watching. I never saw a bird egg laid or hatched, and I missed the first flight of the babies. What I watched was the waiting—to hatch, to be fed, to fly. This made me think that perhaps time speeded up and slowed down for birds just as it did for me; the big changes happened suddenly, and in between you lived happily enough, but with a sense that you were waiting.

After the June rains ended, the swamp began to dry up. Marilyn and I stomped cattails into the retreating mud to build footpaths. In places where we wouldn't be seen from the road, we made platforms big enough to hold our tepees—frames of old, dried cattail stalks woven around with the long straps of green leaves. We were small and light and could travel through the swamp on our cattail paths, but grownups couldn't follow us. Cars roared by on the dirt road, throwing up clouds of dust that settled across the swamp, but the people who passed never saw us.

One way to find out about the world is to take things apart. I spent hours pulling new green leaves out of cattail bases. If you pull slowly and steadily on a single bundle of leaves, it will release with a low pop and slide smoothly out of the plant. The soft, round, fleshy base bleeds a sticky, starchy-tasting liquid. The tiny new leaves in the center of the base are very thin and almost white, like little

slips of translucent parchment put there to mark the place and remind us of something.

Horsetails, clover buds, lambsquarter, and other plants also came apart in interesting ways. Tear a lambsquarter leaf and a fringe of clear film will detach from the velvety dark-green interior, which has a smell similar to the cattails. The ordered insides of plants surprised me, and I continued to pull them apart, repeating the experiment long after I knew what I'd find.

Cattail flowers are hard green cylinders at first, which mature into cottony-topped brown wands. At all stages, the cattail tops could be pulled or mashed apart into their many tiny components. If there were boys around we used the dried stalks as swords, and wisps of the cotton filled the air around our hollering.

We also knew the animals of the swamp, which included turtles, garter snakes, an occasional muskrat, mice, water bugs, and especially frogs. The rhythmic swell of singing and croaking frogs vibrating the swamp in the early evening was impossible to resist. I would listen until I had to sit down with dizziness. The masses of clear, shell-less, slimy frog eggs, each with a tiny black dot in its center, were more enticing than an untouched bowl of red jello. I was tempted to shove my hands into them and squeeze a few eggs until they popped, but I never did.

We were allowed to collect a mason jar of frog eggs to bring home and watch. In a dented old galvanized tub filled with water and handfuls of green algae and other water plants, the eggs changed. The dots developed eyes and tails first, and then the pure black fishbody formed between. When they were nearly ready to hatch, they curled around like little floating commas waiting for a sentence. Finally, the tiny, very unfroglike creatures thrashed out of the sticky egg mass and swam free.

The first to hatch were the luckiest because they grew fastest. Tadpoles provided my first experience with cannibalism. Big ones swallowed little ones in a frenzy. Out of the several dozen eggs we collected, most of which hatched successfully, usually fewer than ten survived the appetites of their siblings. We bought fish food, brought in more plants, but they preferred their own tadpole flesh. Marilyn and I concluded, after the initial offers of other food, that what we saw was a fact not susceptible to our intervention. This was how frogs lived.

A few others were casualties of their own exuberance. Unlike the swamp water, whose boundaries were soft, wet mud, the metal tub had a fatal, definable edge. Tadpoles that jumped over the rim onto the sidewalk dried there, sticking to the concrete like black spittle. Eventually, the survivors sprouted legs, bodies enlarged to balance the huge eyes, tails gradually diminished, and a few fine little frogs were returned to their swamp, apparently quite prepared to thrive there.

I spent the summer between fifth and sixth grade in an activity that effectively ended the part of my childhood that had been protected by the swamp. I decided to collect wild birds' eggs that year—one of each kind I could find. The first time, I waited hunched in the cattails until I was sure of the identity of the parent bird, snatched a warm egg from its nest, and carried it home. There I carefully pricked a hole in each end with a pin, blew out the eggy insides, put the shell in a gray cardboard egg carton, and labeled it: REDWING BLACKBIRD.

Why is it so thrilling to fatally outsmart another creature? That summer my hunt escalated into an addiction to intellectual pride and dominance. Old relationships changed. I already knew that a killdeer would fake a broken wing to lure a predator away from its nest, and I had laughed at or sympathized with the bird's antics. Now as I watched this beautiful bird stumble across the open field, dipping one awkwardly outstretched wing and calling the shrill plaintive cry that provided its name, I walked straight to the place where I'd seen it first. Then I waited until it came back close to recapture my attention. When the bird took off again I walked in the opposite direction, eyes on the ground, searching for the camouflaged eggs among the rounded pebbles in the rocky field. We continued to play this not-so-innocent game for as long as it took me to find the nest and triumphantly steal an egg, while the distraught bird hobbled around in its only defense, so close I could have grabbed it, too.

All that late spring and early summer, I prowled the neighborhood raiding nests—ducks, magpies, sparrows, robins, finches, swallows—until I had about two dozen different eggs lined up in the cardboard cartons. Sometimes when I blew out an egg there was blood in the yolk. Once an egg was already rotten inside. As the collection grew I wanted more.

Because I had described this as a science project, nobody stopped me. Toward the end of my collecting, I realized I'd been waiting for one of the eggs to hatch in my hand, or a baby bird to fly from the pinhole or from the spoiled mass of egg—some miracle to arrest my hunt.

In the fall, I took the containers of labeled eggs to school, but when my classmates' interest in them waned, they came home with me and were gradually lost or forgotten. The next spring, when Marilyn and I returned to the swamp with all its slimy, muddy, growing, smelly things, there was something vaguely dangerous about that familiar place.

Until then, I had never considered that my presence in the swamp had any impact at all. I had felt invisible, not just to passing cars, but to the cattails, birds, and frogs. Nothing I could do would change the order of things there, and I had felt no particular responsibility to the swamp. Right and wrong were not conscious considerations in my relationship with the place, any more than they were when my hands explored my own body.

Now I realized that I had been intentionally disruptive. Not being able to identify the specific birds whose nests I'd raided only increased my imagined range of destruction. Worse, part of me was anxious to resume the hunt.

On the other hand, for the first time I thought about building a wall to protect the swamp from the road dust—and from predators like me. These were new ideas, full of developing notions of power and influence, and they expelled me from the body of the universal animal. I was no longer invisible.

The old instinct toward invisibility returns immediately when I enter a wild place alone, prepared to slither into the soft mud, or to crouch under a log to become part of some unimagined secret. The other awareness, wonderful in a different way, makes me note my footprints, and acknowledge what is trampled when I clear a path.

SHEILA ROBERTS *is a geologist who works as an editor at the Geological Survey of Wyoming in Laramie. This essay, she says, was her "first serious attempt at creative non-fiction."*

Left Sink

BY ELLERY AKERS

The first time I saw Left Sink I was brushing my teeth and almost spit on him. I wasn't expecting to find a frog in a Park Service bathroom, but there he was, hopping out of the drain and squatting on the porcelain as casually as if he were sitting beside a pond.

He was a small green tree frog, no bigger than a penny, and his round, salmon-colored toes stuck out like tiny soupspoons. For a few minutes I stared into his gold eyes, each pupil floating in the middle like a dark seed.

I was so close I could see his throat pulse, but I was probably too close, for he looked at me fearfully and leaped onto the silver "C" of the cold-water faucet.

Then he must have thought better of it, for he jumped down again, and sat, hunched over, by the soap. He kept making nervous little hops toward the safety of the drain, but my looming face was obviously in the way, so I ducked below the basin for a moment, and when I looked again he was descending into the hole, head first.

Feeling I'd disturbed his evening hunt, I decided to make amends. I grubbed around the floor for a dead moth, found one (though it was a little dried up), and offered it to the hole. The wing slanted into the drain, but nothing happened. I thought perhaps he'd hopped back down into the pipe. Trying to find something a little more appealing, I picked around the window sills until I discovered a really decent-looking moth, pushed it up to the drain, and waited. After a few minutes, I got discouraged and walked away. When I turned back to sneak

one last look, I found both moths had vanished.

The next day was so hot I forgot Left Sink completely. It is always hot in the California chaparral in September, especially in the Gabilan Mountains. I spent the afternoon in the shade, lying on the cool pebbles of a dry wash and looking over my field notes. I had been camping for weeks, studying birds, and by now I had gotten used to the feeling of expectation in the landscape.

Everything seemed to be waiting for rain. The streambeds were dry, the fields were dry, and when the buckeye leaves hissed in the wind they sounded like rattlesnakes. Ravens flew overhead, croaking, their wings flapping loudly in the air, and the rocks baked. Once in a while a few thirsty finches fluttered up to a seep in a cliff and sipped from a damp clump of algae.

I leaned against the cool flank of a boulder and fanned myself with my hat. From far away I could hear the staccato drill of a Nuttall's woodpecker.

All the animals had some way of coping with the heat. The wrentits could last for several weeks without drinking. The deer found beds of shade and waited patiently until evening. Even the trees adapted. Though I couldn't see it, I knew that somewhere beneath my boots, 100 feet down, the root of a digger pine was twisting along a crevice in the bedrock, reaching far below the surface to tap into the permanent water.

And the frogs—the normal ones—were sleeping away the summer and fall, huddled in some moist spot in the ground in a kind of hot-weather hibernation.

That night, when I went back to the bathroom, I discovered Left Sink had a neighbor. Even before I turned on the water in the right-hand basin, I noticed a second frog, and when I stepped back to look at both of them in their respective sinks, I started to laugh: They reminded me of a couple of sober, philosophical old monks peering out of their cells.

Overhead was a third frog, puffy and well-fed, squatting on top of the fluorescent lights, surrounded by tattered moths. Light Buddha, I would call him.

In the world of the bathroom the light shelf was a delicatessen of the highest order. Light Buddha sat there night after glorious night, lazily snapping up moths as they fluttered past. The other two frogs seemed content to stake out the sinks, which weren't quite as dependable a food source, though they weren't bad. Almost every night I found a damp moth thrashing around in one of the basins, one little flopping death after another, leaving a trail of scales behind.

Right Sink was extremely shy, and spent most of his time crouched far back in the pipe. Usually I saw his gold eyes shining in the darkness, but that was all. Left Sink was more of an adventurer, and explored the whole bathroom, darting behind the mirror, splatting onto the porcelain, hopping on the window sills, leaping on the toilet, and climbing the slippery painted walls toe pad by toe pad.

From time to time I was tempted to pick him up as he was climbing. But I didn't think it would be fair; I knew this geometrical universe, and he didn't. Besides, there was no place for him to hide on those smooth, painted bricks, so I let him be.

I was amazed at how few people noticed Left Sink, even when he was sitting on top of the faucet. Kids saw him right away, though, and I worried sometimes that one night a little girl would pop him into a jar and take him home to some confining terrarium.

Also, he stood out. Even though tree frogs can change color in ten minutes, there was nothing in Left Sink's repertoire that could possibly match white paint; the best he could do was a sickly pink.

I could always tell if he had just emerged from the drain because he would still be a murky gray-green. As the evening wore on he got paler and paler. Once I couldn't find him for half an hour. Finally I caught sight of him over my head. Plopped on a narrow ledge, he looked like a pale pebble in all that metal and paint. I climbed onto the toilet for a better look. To my horror he began hopping along the ledge, which was no wider than half an inch. It was a ten-foot fall to the floor—for a frog that small, an abyss. He bounded past me, his grainy throat quivering.

He headed toward a swarm of moths and flies that circled the fluorescent lights. A fly drifted down from the glare; Left Sink, his pink mouth flashing, snapped it up.

I was never quite sure just how skittish he really was. Sometimes he tolerated my watching him, sometimes he didn't. I got in the habit of sidling up to the plumbing, bent over so as not to be seen, and I must have looked pretty peculiar. One night a woman came into the bathroom and caught me hunched over like Quasimodo, staring intently at the drains, my hands full of dead moths.

"Left Sink! Right Sink!" I was saying. "Got a little treat for you guys!"

The woman bolted out the door.

For the next few weeks I checked on the frogs every morning and evening. Sometimes when I saw Left Sink skidding down a length of plastic, unable to hold on in spite of his adhesive toe pads, I worried. I couldn't help thinking there was something unnatural about a frog in a bathroom.

Of course, I knew there were a few oddballs that *had* managed to live with us in our artificial world, but they

A ZESTY BLEND WITH REAL LEMONS, HIBISCUS, AND CITRUSY HERBS

The day had started with a **BANG** *that made me wimper so I poured a steaming lemon sweet cup and sipped and slipped away to the days when I'd worn* **Birkenstocks** *instead of* BALLYS, *when lunch was something you* **HAD** *rather than something you* **DID**, *and then, as that* Hot *honey sweetened cup reached Lemon Zinger perfection and its* tangy *steam rushed up to warm my face, I wondered how I'd gone from being called a* hippie *to a* **YUPPIE** *and if maybe someday I could become something that didn't end in* "ie." *But, hey, I'd figure that one out over another cup of tea.*

A DIFFERENT CUP OF TEA

were mostly insects. One year in school I had learned about the larvae of petroleum flies: They lived in the gunk of oil fields, so numerous at times that, according to my textbook, they imparted "a shimmering effect to the surface of the oil." Their world was oil; if you deprived them of it, took them out and cleaned them off, they'd curl up and die in less than a day.

In that same class I'd learned that furniture beetles live in our table legs, and occasionally, in wooden spoons; drugstore beetles float happily in bottles of belladonna, mating, pupating, dying. We have cheese mites in our cheese, and flour mites in our flour.

As far as I knew no one had ever done any research on frogs and plumbing. Luckily, I always carry a trunkful of books and field guides in my car, and one night I flipped through every book I had to see if I could find any instances where humans and animals—wild ones—had actually gotten along. Arthur Cleveland Bent said that wrens nested in old clothes in barns, and swallows on moving trains. Edwin Way Teale said he had once read about a pigeon using rubber bands and paper clips in her nest on a window ledge off Times Square. One year, he wrote, a thrush spent the entire winter in a florist's shop on Madison Avenue, flitted about between the iced gladiolas and roses, and flew away in spring.

But no one mentioned anything about frogs.

Actually, considering the drought, Left Sink had a pretty good set-up. It was already October and still no rain. Once in a while a few drops would plop into the dirt and gravel, and I would catch a whiff of wet dust, soaked cheat grass, and buckwheat. But that was all.

All the other frogs were holed up in the dirt, huddled in a moist crack or an abandoned gopher hole, waiting for the first rains of winter to wake them up. There were probably a few hiding in the field next to Left Sink's bathroom, their eyelids closed, their toes pulled under them to conserve moisture, unmoving, barely breathing, their heartbeats almost completely stilled. If I dug them up they would look like small stones.

One night just before I was about to leave, I had a nightmare. It was a dream I had had many times, a dream of a city so polluted the air rose in black plumes above the granite and cement. I was at the entrance of a tunnel. Inside I could hear a whoosh of air: Millions of butterflies were flashing in the dark, thousands of ducks, eagles, sparrows, their wings making a vast rustling as they flew off and vanished.

I heard a low shuffling. After a while I realized it was the sound of feet: the slow trudge of bears, the pad of badgers, the pattering of foxes, the rasp of a hundred million beetles, rabbits, ants, mice. I looked around, panicked, to see if any animals were left. There were still cockroaches scuttling over the window sills. There were pigeons, flies, starlings. I named them over and over in a kind of chant: the adaptable, the drab, the ones who could live with us, who had always lived with us.

A fox coughed close to my camp in the middle of the nightmare and woke me up. I unzipped the tent and looked out at the stars: Rigel, Algol, clear, cold, and changeless. A golden-crowned sparrow chirped from a nearby branch, then sputtered off into silence. For a while I tried to stay awake, but soon drifted off.

The next morning huge bluish clouds rolled across the sky. A couple of ravens sailed past the cliff in front of me. One of them jackknifed its wings, plummeted straight down, and then, at the last minute, unfolded them and flapped away. It was still early, but when I reached the bathroom it had already been cleaned. It reeked of ammonia, and a mop and bucket leaned against the door.

I rinsed off my face, brushed my hair, and looked sleepily into the drains. As usual, Right Sink was huddled far back into the dark pipe; he retreated still further when I bent over.

Left Sink, however, was gone. I wondered if he had slipped behind the mirror, or had come up in the world and was squatting above with Light Buddha. The shelf was empty. I looked on the window sill—not there either.

It was not until I opened the door to the toilet that I found him. There, in the center of the ammonia-filled bowl, his green bloated body turning gray, was Left Sink, splayed out in the milky liquid, dead. Floating in front of him was a dead damselfly. I suppose he must have jumped in after his prey, convinced he was at the edge of a strange-looking pond, his toe pads gripping the cold, perfectly smooth surface of the porcelain.

His skin looked curdled, and it occurred to me he might have been there all morning waiting to die. Then I remembered that frogs breathe through their skin; it must have been a hard, stinging death, but a quick one.

I flushed him down, wishing I could think of something to say as he made his way through the pipes and rolled out to the septic tank, some acknowledgment of the link between my kind and his, but I couldn't think of anything except that I would miss him, which was true.

When I opened the door a couple of nervous towhees blundered into the bushes. It was beginning to rain. ■

ELLERY AKERS *is a writer and naturalist living in San Francisco. Her book of poems,* Knocking on the Earth, *was published last year by Wesleyan University Press.*

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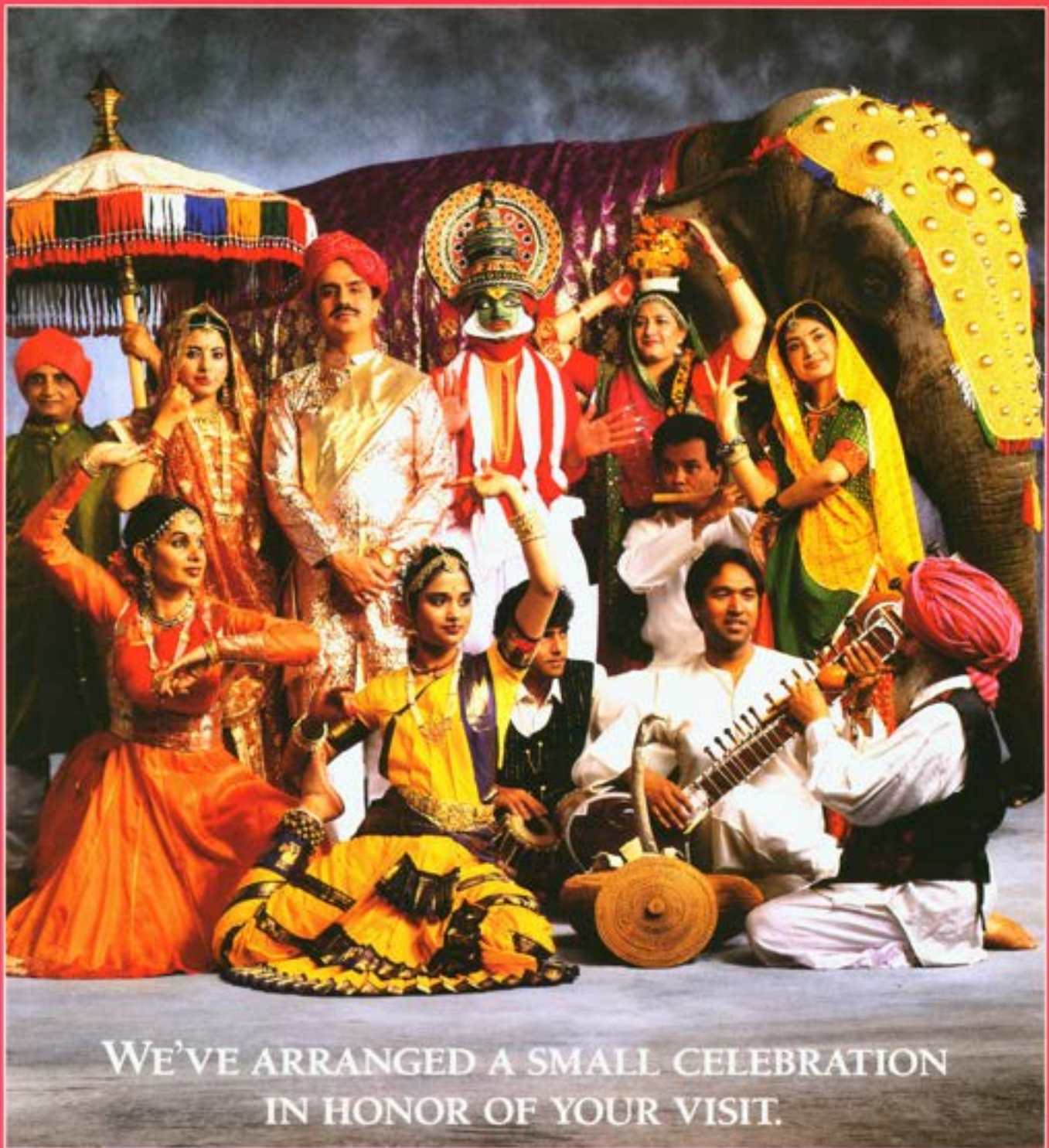

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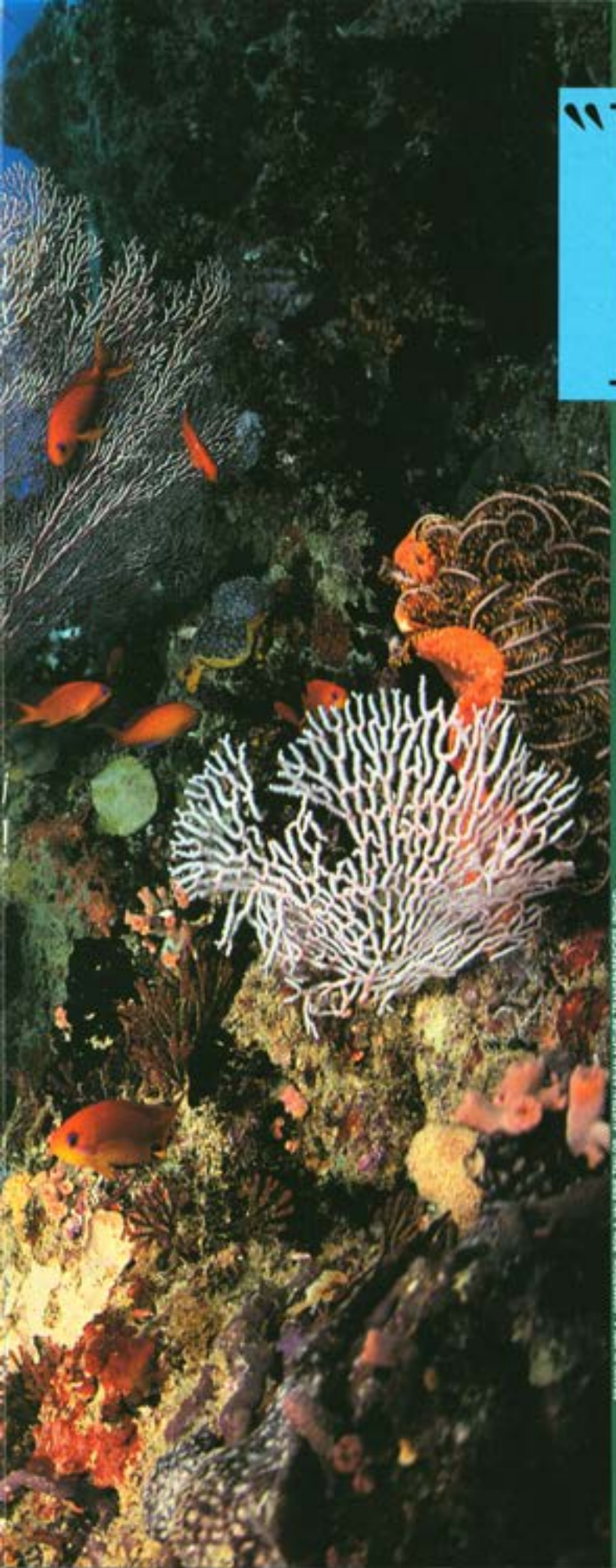
"DIVE?" he said



Strap what feels like a ton of lead to your body; now jump into the ocean. Take a breath, look around—and find yourself at home.

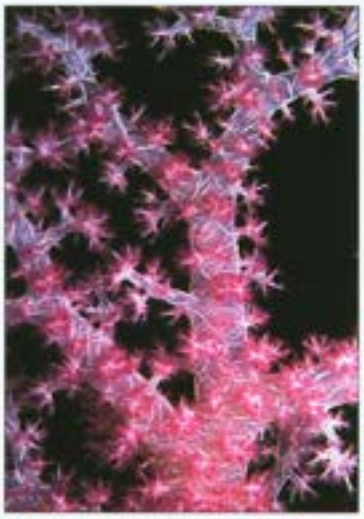
At first I thought (maybe even hoped) that I'd emerge from the waters of Australia's Great Barrier Reef feeling like Lloyd Bridges, the swaggering hero of the old TV series *Sea Hunt*. I'd have met and triumphed over another teeth-gritting physical challenge, and I'd have the scars and tall tales to prove it. Instead I returned feeling a lot more like Alice after her traipse through Wonderland: awed, slightly dazed, and not at all sure that anyone would take me seriously once I told them what I'd seen.

The reef certainly is "curiouser and curiouser"—as strange as anything Lewis Carroll dreamt up. And its strangeness is magnified by the great

by Reed McManus

FRANKLIN VIOLA COMSTOCK; RON & VALERIE TAYLOR AUSTRALASIAN NATURE TRANSPARENCIES (RIGHT)

Clockwise from left: Aerial view of Heron Island, terrestrial base for otherworldly exploration. The island was formed thousands of years ago when winds and currents piled broken coral and sand on a reef. ■ A diver negotiates her way through a coral garden. ■ Unlike the hard corals, soft corals have internal skeletons. ■ The teeth of the orange-blotch parrotfish form a beak that can crush coral. ■ Damselfish, which forage for algae or plankton, are one of the most abundant reef fish.



lengths to which people will go to visit it. Snorkelers float on the ocean surface gazing down through swim masks. Tourists press their faces up to the portholes of "semi-submersible" tour boats to catch glimpses of it. But those who take the total-immersion route, the scuba divers who leap into the water wearing several thousand dollars' worth of equipment, are the ones who meet the reef and its inhabitants eyeball to eyeball.

Diving turns some basic tenets of human existence inside out. It's counterinstinctual to go voluntarily to one of the few environments on Earth where humans can't breathe, a medium our ancestors left behind millions of years ago. Besides, for many of us, any nearby ocean is way too cold.

Like parachuting and spelunking, diving always seemed like a sport that appealed only to a select few whose motivations I didn't particularly want to know, and whose behavior I didn't care to copy. For years I'd seen divers, looking like so many walruses in neoprene wetsuits, waddle to the ocean's edge at California's chilly Monterey Bay and disappear, emerging an hour or so later into the coastal fog looking wetter but no wiser.

But from between their chattering teeth and bluish lips these zealots claimed that there was a whole different world down there, and I was missing out. Not wanting to be excluded is as good a motivation as any, but what clinched my decision to join in touched closer to the bone: an invitation to dive Australia's Great Barrier Reef, where the tropical waters along the Queensland coast are swimming-pool warm.

In our age of sue-unto-others-before-they-sue-unto-you, purveyors of underwater breathing equipment walk a very thin line. To rent gear or hire dive services anywhere in the world, you must have completed a certification course authorized by one of several international dive organizations. To earn my certification I had first to spend hours in a classroom, listening attentively to tales of what happens when lungs explode and poring over tables that calculate one's risk of decompression sickness and nitrogen narcosis. Next my fellow students and I practiced a regimen of life-sustaining

drills in the controlled environment of a swimming pool. Only then were we thoroughly tested on our ability to defy the dictates of evolution in the open ocean.

By the time we got our toes near Monterey Bay one drizzly gray weekend in early March, our class was half its original size. It appears that I was among the unfortunate half that had not heard of the Elysian-sounding "warm-water option," in which students complete their classroom and pool training in northern latitudes, then proceed—with a referral letter and a smug grin—to tropical waters to finish the course.

With the conciliatory encouragement "If you can dive here, you can dive anywhere!" from our ever-diplomatic instructor Mike Scott, we spent two days lumbering in and out of the rolling surf and bobbing on the surface of the Pacific like flotsam tossed from passing freighters. Underwater, visibility reached a claustrophobic 18 inches, and the surging tide kept pulling us closer and closer to a nearby breakwater.

The nuances of freshly minted poolside skills dissolve when you find yourself wearing 35 pounds of lead around your waist and being dragged toward a concrete wall. I nearly drowned my partner by forgetting to hand him the air hose during a "buddy breathing" drill. I got tangled in kelp, my only true contact with the marine kingdom the entire weekend. I overinflated my buoyancy vest to the point where I was barely able to breathe but couldn't figure out why. I forgot to blow air into my mask to equalize air pressure as I descended, and walked around with homicidal-looking burst blood vessels in my eyes for the next week.

But I passed inspection and earned my coveted "c-card." Only as my classmates and I celebrated our survival and certification in a bar perched well back from the foaming surf did instructor Mike admit that he would never have gone on a recreational dive under those weather conditions, and that he would have been perfectly willing to call us all out of the water had we become "too miserable." Forcing weary smiles, we turned the conversation to warmer talk of Maui, Cozumel, and the Great Barrier Reef.

Divers, like surfers or skiers, can travel the world and not really care where they end up, as long as they get good sport once they're there. This works in Australia's favor, because while Australians are remarkably unexotic, their diving is among the best in the world.

It's not that I expected aborigines to meet me at the airport, but any other time I've weathered a 12-hour trans-Pacific flight I've been rewarded with foreign languages, strange smells, nearly incomprehensible cultures, and people shorter than me. But this time, upon arrival in northern Queensland, I found a rugged coastline much like California's, broken up here and there by towns brimming with blond surfers, "Big Rooster" drive-ins, and shopping malls. Creedence Clearwater's "Down on the Corner" blasted from the first bar I passed as I set out on a walk around the tropical resort town of Cairns.

Australians, for all their height, are among the most likable people in the world. They share with Americans the exuberance of a culture not saddled with the baggage of an aeons-old history, as well as seemingly never-ending opportunities for mistakes and self-aggrandizement of the type afforded by lots and lots of land. Add British-de-

rived penchants for lager and wordplay, and stand back: It's as though every denizen of a Laramie tavern had developed a felicity for irony and witty repartee.

But rather than blat out "Hey, you guys remind us of us!" Americans revel in the funhouse-mirror differences between the two cultures. Despite having been beaten over the head with Paul "Crocodile Dundee" Hogan's tourism promos, it's impossible not to grin at each and every "G'day, mate!" and "Good on ya, mate!" that sails your way. Added to the differences we're prepared for—upside-down seasons, left-hand-side driving—are the small twists that confront the North American visitor at every turn, among them breakfast sausages large enough

Clockwise from bottom left: Starfish such as the red seastar have five arms, each containing identical sets of organs. ■ Anemones are related to corals, but lack skeletons. They feed by engulfing their prey with stinging tentacles. ■ A black clownfish resides with impunity among the treacherous tentacles of a sea anemone. ■ Even a slight brush of flesh against a stinging hydroid causes pain and itching that may take a month to subside. ■ A fairy queenfish, common to current-swept areas where the reef drops off into the deep ocean.

EYES ON A PRIZE

Australians are proud of their Natural Wonder of the World and have taken valiant steps to protect it. The Great Barrier Reef is part of the world's largest marine protected area, administered by the commonwealth's Great Barrier Reef Marine Park Authority. The agency is charged with balancing the demands put on the reef by tourists, commercial fishing interests, collectors, and scientists.

Surprisingly, the greatest proven threats to the reef are posed by tourism and poaching, two relatively manageable evils by North American mass-devastation standards. (The reef was once being considered for oil exploration, but the Australian government has prohibited drilling and mining in the park.) Even damage caused by the notorious coral-eating crown-of-thorns starfish, a problem that many people suspect has been exacerbated by human activity, has struck only in pockets of the reef, and appears to have slowed considerably in the last decade.

What has saved Australia's reef so far is the fact that Queensland is sparsely populated, says Dr. Ian Lawn, director of the University of Queensland's Heron Island Research Station. His field laboratory at the reef's southern tip has the luxury, at least for now, of devoting its efforts to basic research rather than "catch-up" studies of human impacts. This is good for reef biologists, because intensive scrutiny of the reef didn't really begin until a decade ago, and for scientists the region is still in many ways a blank slate. "You can discover ten new species in one week," Lawn says.

There is growing concern, though, that development of the mainland could wipe out the fragile corals, as more and more land is converted to agricultural and urban uses. (The problem has already occurred at the northern end of the reef, which virtually hugs the shoreline.) Sediments reduce water clarity, blocking the photosynthesis required by reef life forms, while sewage and agricultural runoff raise nutrient levels to a point where many corals can't survive.

Corals are also vulnerable to temperature changes outside a relatively narrow range. Scientists are only beginning to study the effects that global warming may have on sea temperatures throughout the tropics. —*R.M.*

to wage war with, and Vegemite, a dreadful concoction that I had honestly thought existed only in the collective mind of Monty Python, but that for some long-forgotten reason is the bread-spread of choice Down Under.

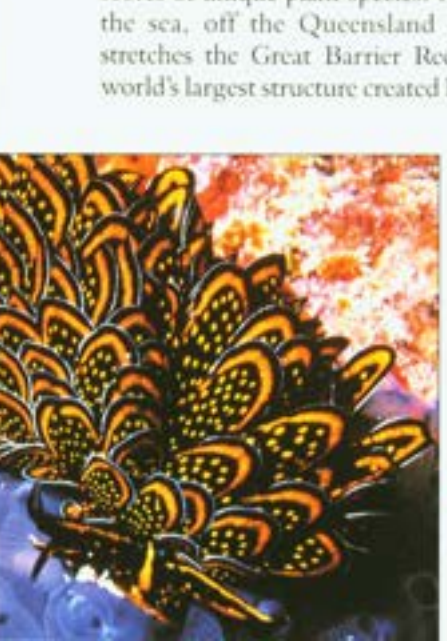
While there may be similarities between our cultures, nature is a different story. Having developed in isolation for 55 million years, Australia's natural world is influenced only by itself. On land you've got koalas, kangaroos, wombats, and platypuses, along with scores of unique plant species. And in the sea, off the Queensland coast, stretches the Great Barrier Reef, the world's largest structure created by living organisms, a multimillion-year-old collection of more than 2,600 individual reefs that extends for 1,200 miles and supports the most diverse ecosystem on the planet.

Good on ya, indeed.

"Yer brains are comin' outta yer 'ed, mate!" Bruce calls out as he grabs my air tank and pulls me up into the dive boat. After seven days with the Heron Island Resort's dive crew, I know I'm being signaled to wipe the snot off my mustache. Fifty minutes spent floating 30 feet below sea level alongside an agglomeration of the most astonishing animal life on Earth will dishevel even the most fastidious diver.

On this latest descent we spent ten minutes perched alongside a coral outcrop, or "bommie," while a trio of 8- to 10-foot-wide manta rays sailed around and above us, their immense wingflaps waving slowly through the water. Several times we were able to reach out and stroke the animals as they passed over our heads.

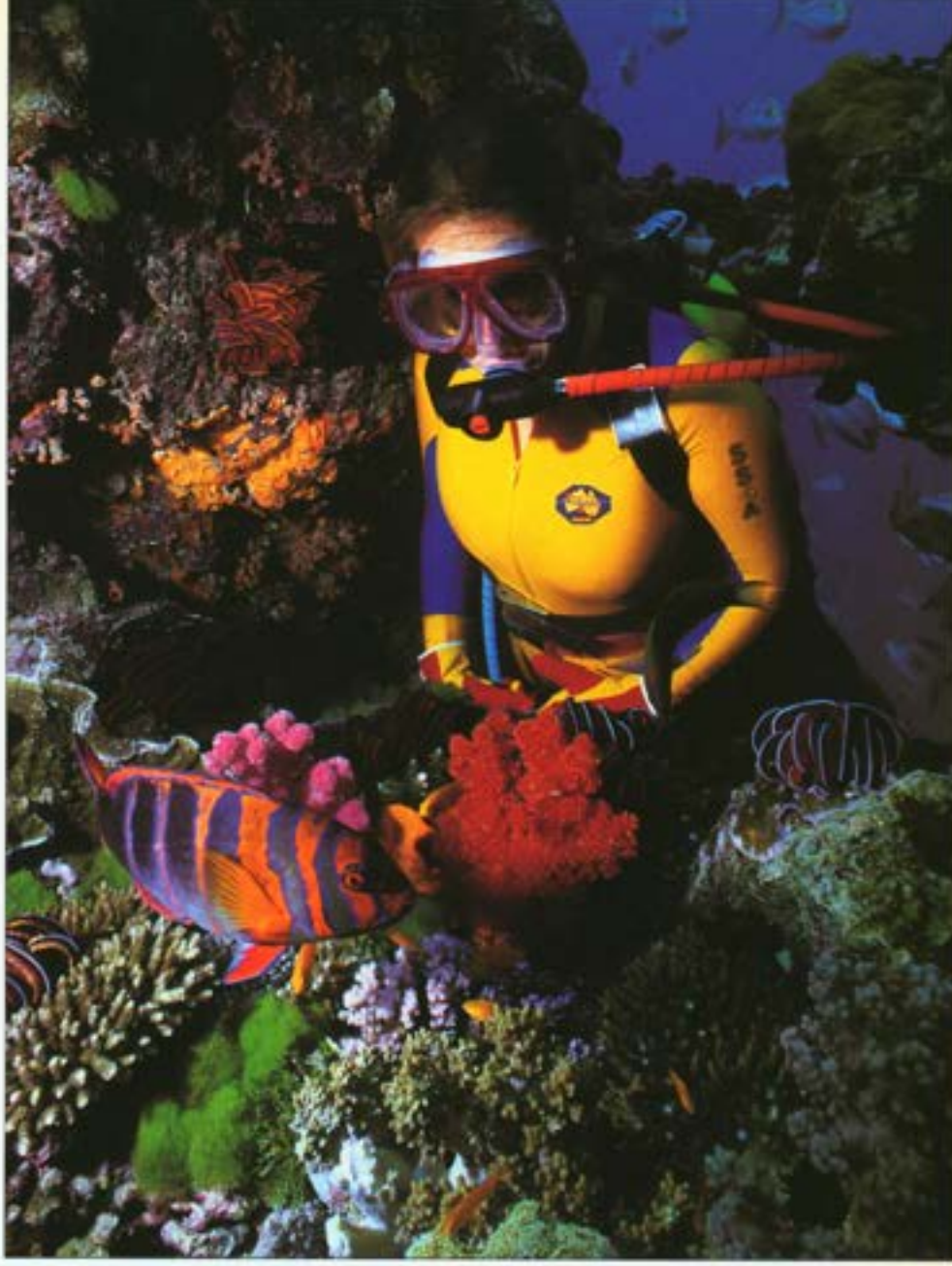
More than a dozen dives now separate me from my tentative introduction to the sport back in Northern California. Conditions here are unfathomably better. The sun is out, the water is blue, the visibility underwater



is 60 feet, minimum. Even when I'm 30 feet down I always know which way is up to the reassuring, sun-dappled surface. The tropical warmth allows me to wear a thinner wetsuit, which in turn enables me to wear half the lead weights I wore in Monterey Bay and still avoid bobbing corklike on the surface.

Like Don Knotts in *The Incredible Mr. Limpet*, I'm right at home. Breathing air from a tank has become second nature, and I no longer focus on my inhales and exhales as if they'll cease without constant vigilance. A typical novice, at first I was always the one to "suck up" my air supply, and low reserves would force me to the surface ten minutes or more before anyone else in my group. Now the game is to sip air: The longer I'm able to make each breath last, the longer I'll be able to wander through this marine menagerie.

I take my cues from a large grouper swimming beside me. Float with the current. Change direction with gentle kicks. Make no sudden moves. Rest behind coral outcrops, where the water is calmest. As long as I move slowly, the fish accept me as just another brightly colored, oddly shaped creature. If I try to rocket off and catch up with any one of them, I invariably fail. Everything is done in slow motion, like a space walk, and is really quite easy. Maybe this is what Lloyd Bridges did when he was out of camera range.



Like the grouper, my eyes are stuck wide-open. I discard all attempts to attain left-brained comprehension of what I'm seeing: "Oh, wow!" becomes my catch-all response. I try carrying along a slate—a waterproof writing tablet on which I can scribble questions for the dive guide, like "Why does that stonefish have slightly different coloration than the others?" or "Is that shark following us?" But the overwhelming variety of reef life quickly swamps my newcomer's attempt to catalog and comprehend it.

The inability to communicate using subjects, verbs, and predicates pares the experience down to its most basic elements. My tongue-tied partner and I supplement the diver's standard set of safety-oriented hand signals with others more gratifying: Two hands clapping mean "Natural spectacle ahead!" Gently waving arms mean "Hey! Manta ray!" A wave of the fingers with hands held at one's side means "Hark! Giant turtles!" Palms pressed together like a fin (or as if in prayer) mean "Yikes! Shark!" (We know that the half dozen or so sharks we encounter are more afraid of us than we are of them, but the image of these sinewy creatures coursing through the blue depths still conjures up any number of scenes from *Jaws 1* through *17*.)

I find myself becoming obsessed with rays and turtles and other Very Large Creatures, and have to make a concerted effort to focus on the smaller

Opposite, from left: Harsh colors warn away the sea slug's would-be predators. ■ A purple queenfish must vie for attention with about 2,000 fish species. ■ The hawkfish gets its name from its habit of swooping down on prey from coral perches.

Above right: A flashy diver nearly upstages the flamboyant harlequin tuskfish.

WHERE THE REEFS ARE

Although the Great Barrier Reef garners the lion's (or perhaps the lionfish's) share of underwater attention, the world's tropical waters abound with beautiful coral reefs. Each has its own character, and many are easily accessible to North American divers and snorkelers. The prime dive areas—especially in the Caribbean region—are often unfamiliar to resort-hoppers, who crave wide, sandy beaches. At the top of a diver's priority list is clear water, unclouded by natural or manmade runoff.

A partial list of reef-diving destinations follows. *—Joseph Wallace*

BELIZE

This tiny, English-speaking country tucked between Mexico and Guatemala is a little-known treasure, filled with untouched rainforest, unexcavated Mayan ruins, and virtually unexplored coral reefs. Home to the second-longest barrier reef on Earth (you know the longest), Belize's most popular dive destination is Hol Chan Marine Reserve, an expanse of coastal mangrove, sea-grass meadows, and coral reef. Dives here feature forests of elkhorn, finger, and brain coral, and reef life that includes moray eels and giant groupers.

TURKS AND CAICOS ISLANDS

Less well-known than the nearby Bahamas, these islands are among the "newest" dive destinations in the Caribbean. Their pristine reefs boast deep caves, exciting channels, and a full complement of inhabitants—but (so far) none of the degradation common at many of the more heavily visited locations.

CAYMAN ISLANDS

The glory of the Caymans, 150 miles south of Cuba, is their combination of shallow sunlit reefs and dizzyingly deep precipices that plunge thousands of feet into black abysses. Sharks, rays, and other reef fish inhabit this haunting waterscape, and the sheer reef walls are laden with an astounding variety of sponges.

BONAIRE, NETHERLANDS ANTILLES

This arid island perched off the Venezuelan coast offers divers an unbeatable opportunity to explore unspoiled reefs virtually every way you turn. Bonaire is fringed by extraordinary reefs, some set just a few feet offshore.

FLORIDA KEYS

Ignored by most serious divers because they're so overused, the reefs of the Florida Keys are stark examples of the damage caused when sewage and fertilizers from shoreside development send nutrient levels (and algal growth) soaring, too many divers break off coral intentionally (with their hands) or accidentally (with swim fins), insensitive boaters drop anchor or run aground on fragile corals, and anglers deplete fisheries.

TRUK LAGOON, MICRONESIA

This vacation destination isn't exactly a short hop from North America. It is, however, one of the world's most spectacular dive sites—in part because of its beautiful reefs, and in part because of the dozens of submerged Japanese warships, ghostly mementos of a devastating Allied air raid in 1944. Divers can explore the spectacular *Fujikawa Maru* and other wrecks, which have become home to a profusion of soft corals, anemones, and fish.

GALÁPAGOS ISLANDS

Don't look here if you dream of vast stands of coral. But the Galápagos will give you a chance to dive among some of the world's most fascinating—and most famous—creatures: marine iguanas stalking over algae-covered rocks, curious sea lions darting past your face mask, huge eagle rays, and countless others.

HAWAIIAN ISLANDS

Another destination without many reefs. But here, a quick trip from the West Coast, you can get a glimpse of the glories of tropical Pacific marine life, from lemon butterflyfish and Moorish idols to beautiful tangs and angelfish. (Again, nothing exceeds like access: According to one guidebook, Oahu's Hanauma Bay offers good reef-protected diving, but "frequent collisions with other snorkelers occur.")

animals and on the reef itself. I don't have to look hard. The Barrier Reef supports more than 1,500 species of fish and 400 corals, along with 4,000 mollusks (clams, snails, and their ilk), 350 echinoderms (starfish, sea urchins, and others), and a few zillion crustaceans, worms, and sponges. From what I can tell, each has chosen its own peculiar combination of shape, color, and behavior.

I grab a reef-fish identification slate—a set of eight waterproof cards held together by a plastic ring, printed front and back with the pictures and names of more than 280 species—and try to sort one from another. I see a beautiful orange fish with white stripes near its eyes that looks sort of like a clown, fumble through the cards, and lo and behold, it's a clownfish. Many other species have similarly obvious monikers: the batfish, the balloonfish, and the sea cucumber. With only slightly more imagination one perceives the analogies behind the trumpetfish, angelfish, and sergeant-major fish. Whoever named these creatures clearly hadn't gotten much beyond the "Oh, wow!" stage either.

Likewise for the corals that make up the reef itself. I drift among expanses of brain, staghorn, plate, mushroom, bubble, and finger corals. Even when I'm staring at the reef through a face mask, it's difficult to grasp that it is a living organism formed by primitive jellyfish-like animals called polyps. Among the polyps are the hard corals, which form a tough, protective surface by excreting calcium carbonate, the main ingredient of limestone. When they die, their skeletons, and those of other creatures such as sea urchins and snails, gradually build up the reef (as well as Australia's tourism industry). It's a delicate system, and coral reefs thrive only under certain conditions: The water must be clear (to allow sunlight to penetrate), it must cover the reefs all or most of the day, it has to be salty, and its temperature must not drop below about 64 degrees Fahrenheit. For these reasons you won't find coral below about 150 feet or around river mouths.

Above: A diver cavorts with a loggerhead turtle. Hawksbill, green, flatback, and loggerhead turtles nest on the Barrier Reef's coral cays; Heron Island is a major (and government-protected) refuge for the greens. *Right:* Much like corals, reef clams have symbiotic relationships with the microscopic phytoplankton that live in the fleshy tissues of the clams' colored mantles.

I'm struck by the vigor with which reef animals strive to avoid becoming something else's dinner. Those not lucky enough to have hard shells like the sea turtle may travel in schools, like the gold-striped goatfish, or have a flattened shape that enables them to slip out of harm's way into cracks among the corals, like the butterflyfish. There are masters of disguise like the spindly dragonfish (which blends into its weedy habitat) and the pufferfish (which fills its body with water to present a menacingly large silhouette to a predator). Spines are quite popular here: The sea urchin, for example, presents a wall of needles to the outside world; its underside protects a mouth and five strong teeth, which it uses to scrape algae from rocks. The underwater carnival of colors isn't just for decoration; besides signaling potential mates, the varied coloration may remind predators to stay away. Lack of color can help, too. Hiding among the sea urchin's deadly spines may be a shrimpfish, a translucent creature whose sole coloring is a vertical black stripe that matches the urchin's quills.

Poisons are a favorite defense—half of Australia's poisonous species live in the waters of the Great Barrier Reef, including the fire coral, stinging seaweed, surgeonfish, cowtail stingray, and box jellyfish (which is responsible for many human fatalities, usually during the warmest months, October to April), and more than two dozen others that one is advised to keep toes and fingers well away from. Many

REEF RELIEF

No one should have to struggle to find reasons for preserving the world's coral reefs and their myriad residents; their strange beauty and extraordinary biological diversity should be more than sufficient to ensure their survival. Should-be's aren't always enough, though, and reefs in every ocean are threatened by development, overfishing, and other ills of progress.

In recent years, a handful of organizations and individual scientists have come up with a new reason to save coral reefs: Their inhabitants may hold the key to improved treatment of human diseases as varied as arthritis, asthma, a variety of cancers, and AIDS.

Researchers have found that many reef animals—in particular such soft-bodied creatures as sponges, sea squirts, and soft corals—contain potent chemicals unlike any found on land. For the otherwise defenseless reef-dwellers, these chemicals provide protection against fish and other predators. In addition, toxic compounds may give marine animals an edge in the fierce competition for space on the crowded reef and sea floor.

In the past few years, scientists at the National Cancer Institute, the Scripps Institution of Oceanography, and elsewhere have shown that what's poisonous to a predatory fish may also be toxic to a virus or a cancer cell. Many of their studies are still in their early stages—but hopeful signs abound.

A team led by Scripps' William Fenical, for example, has spent years studying a novel class of compounds taken from Caribbean sea whips, a type of soft coral. These compounds, dubbed pseudopterosins, have extremely potent anti-inflammatory capabilities, and may someday be used to treat arthritis, psoriasis, and other intractable inflammatory diseases.

Sponges provide some of the most promising compounds found so far. Perhaps the most famous remedy in Neptune's pharmacy is the widely used antiviral drug Acyclovir (used to treat herpes, chicken pox, and AIDS), modeled on compounds taken from a Caribbean sponge. Another substance with good prospects is a compound called manoalide, taken from a South Pacific sponge discovered by Scripps' D. John Faulkner. According to Faulkner, manoalide interferes with the release of enzymes that cause inflammation and pain, and, like pseudopterosins, may be used to treat inflammatory conditions.

One of the most ambitious marine medical-research efforts is under way at the National Cancer Institute's Natural Products Branch, which has tested nearly 20,000 extracts of marine organisms against AIDS and various cancers. The group's Organism Collection Program is in the third year of a decade-long attempt to screen shallow-water creatures for their medicinal value.

"We've contracted with the Australian Institute of Marine Science, which is supplying us with 1,000 samples per year from the Indo-Pacific," says Ken Snader, the program's project officer. "The Great Barrier Reef and other reefs represent the best population of invertebrates and plants, but we're also studying samples from non-reef areas."

So far his program has identified several compounds that show encouraging results. "It's important to remember that more than ten years of study and testing may be necessary before any new drug reaches the market," he says. "We can't hurry the process."—*J.W.*

more animals employ toxins that are harmless to humans, but that effectively repel predators. The Spanish dancer, a stunning red-and-white mollusk that is a favorite "catch" of divers, gives off an acidic chemical unpalatable to most other marine creatures. Of course, this being a well-evolved environment, you find animals that have figured out how to beat the ecosystem: The anemone fish, for example, produces a thick coating that allows it to cuddle up inside an anemone, whose stinging cells are deadly to any other animal less well prepared.

As I glide through the reef's canyons, it finally dawns on me that the brilliant forms and colors adopted by organisms Down Here are responses to life as a link in an extraordinarily unrelenting chain of predation. To stake out and hold on to a niche in a place as diverse and congested as the Barrier Reef, you've got to be shrewd—and have an unrestrained sense of color coordination. If it weren't for the large brains that enabled us to devise clever things like the aqualung and dive resorts, we drab, clumsy humans wouldn't stand a chance in this competitive environment.

Fortunately, reefs are simply feasts for the senses to those of us at the top of the food chain. Seven days perusing the Great Barrier Reef's nooks and crannies were more than enough to make an impassioned reef-rat of me—someone who six weeks earlier had no intention of getting into the ocean without a boat, or at least a surfboard. Put an entirely new world under a person's nose, and you've got to expect him to become hooked.

Emerging from the metaphorical rabbit hole just off the Queensland coast, I found, like Alice, that I "had got so much into the way of expecting nothing but out-of-the-way things to happen that it seemed quite dull and stupid for life to go on in the common way." ■

REED MCMANUS *is* SIERRA*'s associate editor.*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REMEMBER The FLOWERS

Father dug a pond for passing ducks, but plowed while the house burned.

My father was a farmer with no use for fashions. He married and went into business for himself in the spring of 1946, raising laying hens, vegetables, and berries on a seven-and-a-half-acre truck farm. Small-scale horticulture was his real interest. For the rest of his life, he devoted as much time and care to his gardens and orchards and beehives as to his row crops. The eggs he sold to the local candling plant, the berries and vegetables to the local grocers. It was hard labor, mostly done with his hands and a two-wheeled garden tractor, and it afforded a very meager living. By 1947 he had infant twins as well as a wife to support, and sometimes it took all the eggs in the henhouse just to buy milk for the babies. In 1950, he rented 160 acres of land on shares. The move required investing in a collection of ancient farm machinery, but it also brought a

by Paul Gruchow

Illustrations by Gary Kelly

barn and an above-ground house with three rooms and electricity (the family had been living in an unfinished basement). A decade later, my mother inherited 80 acres, giving our family the capital to finance the purchase of an additional 120 acres of land, about 40 acres of it in pasture and meadow. So, in the last years of my father's life (he died in 1970), he became a landholding farmer, although still on a quite small scale.

The fifties and sixties were, of course, a time of great expansion in American agriculture, an expansion fueled by new markets in war-ravaged Europe, by rising demand at home as the postwar baby boom took effect, and by the introduction in 1947 of 2,4-D, the first apparently safe and effective herbicide. 2,4-D was developed but never used as a chemical weapon during the war; it was to become, instead, a powerful tool in the industrialization of farming, a cheap alternative to the labor of cultivation. It had predictable consequences, although they were not predicted. One was the sudden obsolescence of many farmers; more than a million of them left the land in the fifties and crowded into cities, one of the great migrations in history. Another was overproduction; by the late fifties, the Soil Bank and the Ever-Normal granary had become part of the language of agriculture, the measuring wheel of the inspector from the Agricultural Stabilization and Conservation Service one of its tools, and ranks of Butler bins brimming with unmarketable grain among its architectural monuments. We had created a fantastic new food machine, like Strega Nona's pasta pot, but nobody knew how to turn it off.

That was the era in American agriculture when farming became not a vocation but a business, not a domestic art but a branch of industrial science—an era when the farm became not a legacy to be handed down from generation to generation but a capital asset from which one could reasonably expect an adequate return on investment, as measured in dollars and percents. What was the worth of a livelihood if it could not generate wealth?

It was also the era in which the American farm village disappeared. I lived in such a village in the fifties. It had a school and church, to which I walked. It had a social life, organized around the Christmas pageant, the end-of-school picnic, and the summer ice-cream social. We lived within sight and sound of neighbors who had children with whom we played.

One Sunday after dinner, as we called the noon meal, we children were summoned to a rare family conference. "We have something to tell you," my mother said, looking vaguely radiant, "but it is a secret, and you are not to tell anyone. Do you understand?" Yes, my sister and I said, we understand, we will tell no one. "Remember, this is a secret," she said. Yes, yes, we said. "Well," she said, "your father and I want you to know that we are going to have a baby. When winter comes, you will have a new brother or sister. But this is a secret just between us for now. OK?" OK, we said, dancing with glee. We could hardly wait for Mother and Father to take their Sunday nap. (We had not yet discovered the connection between Sunday naps and new babies.) The instant they had settled down, we crept out the door, rushed to the next farm, and summoned the children.

"We have a secret," we said.

"Tell us! Tell us!"

What could we do, fiendishly pressed as we were? We told. "But don't tell anybody else," we said, absolving ourselves of responsibility.

By nightfall it was common knowledge in the neighborhood: "The Gruchows are expecting. Next winter."

In the sixties, the news probably would have remained a secret. We no longer lived in a neighborhood, in any practical sense. There was nobody we might have told; there were no other children within walking distance of our farm. There was no school; we rode the bus to town. The church was accessible only by car. Neighborhood social events had gone the way of the buggy. The gossip was of acquisitions, not of pregnancies. By the sixties, we lived, for the most part, alone. It was a triumph for productivity but not for humanity.

My father disregarded the new agriculture. He did not want land he could not care for. He refused to use the new chemicals. He was certain they were dangerous in ways that we would come eventually to understand. In any case, they took money, and all a hoe cost was some labor, of which he already had an adequate supply. At a time when a farmer's manhood was expressed in the size of his machines,

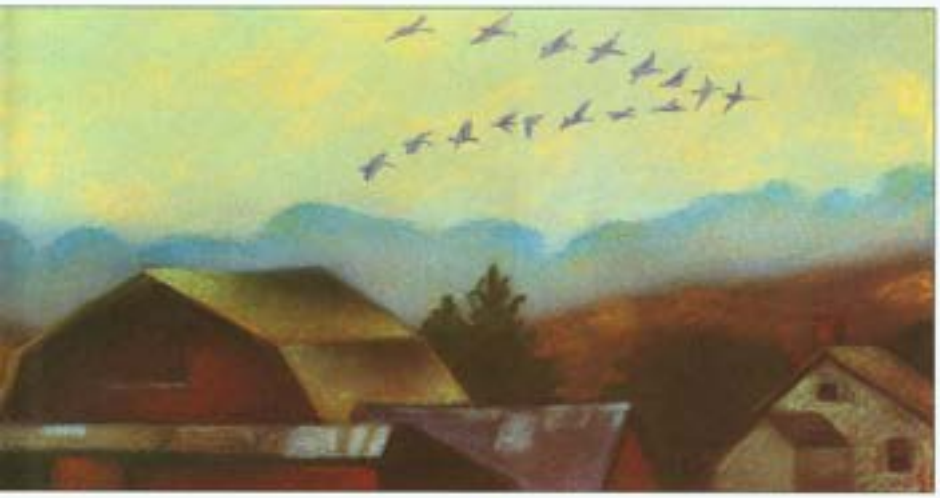
he bought the smallest Fordson tractor available, a machine so insignificant that even I, a child, was embarrassed to drive it. When monoculture was the thing, he diversified. He expanded the sheep herd, started a business in goat's milk for families with infants allergic to cow's milk, planted potatoes and cucumbers, began a big apple orchard, trapped muskrats and mink in the winter. When the neighbors were razing the groves of empty farmsteads to make more land, he planted pines. When they tilled their meadows and plowed them, he dug a new pond in his for wild ducks.

It was not that he was indifferent to success. He studied the bulletins from the Agricultural Extension Service as assiduously as anybody. All winter, he pored over the reports of the crop vari-

ety trials, making notes of new hybrids to try. He kept his own careful performance records in the pocket notebooks handed out by the seed companies. He had a soil-testing kit and used it religiously. He meant to be the best farmer possible. It was just that he didn't see the connection between farming well and getting rich.

I had grown to adolescence and seen something of the world. He made me furious. One day I shouted at him, "You are like the soldier in the army who insists that everyone else is out of step!" I thought myself very clever.

He stared back at me, white with contempt. "Have you ever consid-



ered," he said, "the possibility that the soldier may be right?"

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The reverse side of this, I suppose, is that my father was impractical. I dimly remember the search for a suitable piece of land when it became possible for him to buy one. He wanted two other farms much more than the one he actually bought. One had a single building on a treeless hillside, a European-style farmhouse, very long, in which everything was attached: House, barn, and henhouse all fell under a single roof, so that one could open a door and walk directly from the upstairs bedrooms into the haymow and from there down through a trapdoor into the animal quarters. We children were enthralled. There was an argument in the car on the way home.

"Think how efficient it would be," Father said.

"Absolutely not!" Mother said. "I will not live in a pigsty! You buy it, and you can go live there without me." It was clear that she meant it.

The other was a farm in the river bottom. The house on it was literally falling down. It was worse, unlikely as this was, than the house we were then living in. (Actually, I did not live in it myself, preferring a chicken coop that I shared one agonizing night with a skunk that had come in through a hole in the floor.) On the way home from our inspection visit, Father sounded childishly excited, the only time I ever saw him in such a state. Mother said nothing, but halfway home she began to cry.

The first farm attracted my father because it included an enormous slough, the second because it was next to the river and consisted mainly of woodlands and rocky pastures. We were surrounded by farmers who thought that the most beautiful thing in the world was a flat field turned so thoroughly in the fall that nothing not perfectly black showed in it; who labored and conspired to turn every square inch of earth at their disposal to productive use; who tore out fences, cut down stray trees, drained marshes, plowed up farmyards and road ditches, forsook waterways in a desperate effort to wring the last dime out of a property; who saw any untilled acre as an offense against industriousness. But my father cherished the acres he couldn't farm as much as the ones he planted. He would no more have thought of buying a farm without some waste space in it than of moving to New York City and becoming a belly dancer.

We pulled into the yard at home after our trip to the farm along the river. He turned to Mother, who was staring sullenly out the window, and said, "I suppose you're right, honey. I suppose it really isn't practical." But you could tell that he said it out of resignation, not out of conviction.

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Even now, when the fruits of farming as an industrial enterprise lie like so many rotting apples on the land, there are people who say that there is nothing wrong with agriculture that a better price for corn couldn't fix. They are right. If our success is to be measured in profit margins, let us guarantee the price of corn at ten dollars a bushel or a hundred dollars a bushel—it hardly matters what the figure is—and get on with our lives. The rich will grow very much richer, and the poor will still fail. Land prices will soar, and so will land abuse, and so will the prices suppliers charge. Rural population will continue to dwindle. The communities that survive will continue to struggle to maintain decently vigorous local institutions. Every issue of short-term justice and long-term sanity will remain. But those few who survive will become rich and powerful beyond their wildest dreams.

We in rural America have a long list of enemies: The government did it to us. The bankers did it to us. The grain cartels did it to us. The professors of agriculture did it to us. But the truth is, we did it to ourselves. We have had no agricultural policy that somebody in agriculture didn't press; and no lousy piece of advice ever came to ill unless somebody agreed to take it. The ques-

tion every farmer has to answer, Wendell Berry once said, is this: "Would you rather have your neighbor's land or your neighbor?" We have made the choice over and over again, and, if we now have very few neighbors, we deserve to allocate some portion of the blame to ourselves.

There always was another choice. My father, for one, made it. It was his mark of excellence, the hilltop he made out of his life.

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The heart of the matter is the question of economy. There are, essentially, only two ways to balance a checkbook. One is to make more, and the other is to make do with less. Of course there are—it goes without saying—limits to the second strategy. Even Thoreau kept three chairs in his house at Walden Pond. "None is so poor that he need sit on a pumpkin," he explained, although I once lived in a house where we sat on empty sauerkraut kegs and am not aware that it did me or anyone else any harm.

My father lived in an industrial economy that he did not entirely spurn. He acquired property, occasionally purchased goods and services, participated in government farm programs, and received public support for his participation without, so far as I am aware, any tinge of regret. He believed in government and in its duty, not to mention its privilege, to manage our affairs (including his own) for the greatest good.

We had a serious falling-out over this issue during the Vietnam War. I refused to fight, believing the war immoral; my father held passionately that I was wrong, that I might seek in every legal way to change the government's policy, but, so long as it was the policy, he said, I had a moral and a Christian obligation to do what it asked. During this time I gave a speech arguing otherwise. My father listened to it on the radio, and, when I went to the farm afterward to greet him, he met me at the front door and told me sadly that I was not welcome, that traitors were never welcome at his house. He was no isolationist, no believer in a world where it is every man for himself.

He did, nevertheless, practice a personal economy that was at considerable odds with the public economy. It was, for one thing, domestic. By this I mean that he, as a matter of principle, tried to do as much for himself as possible. In part, this meant being handy. He was not much of a consumer, but he spent a good deal of time at the local implement dealerships, studying the latest innovations and borrowing whatever ideas he found useful. He made an occasional visit to the blacksmith's shop for a bit of ironwork he wasn't equipped to handle, but otherwise he was self-sufficient. He was his own mechanic, his own carpenter, his own electrician, his own soil scientist, his own feed formulator, his own miller, his own veterinarian. Perhaps he died so young because he insisted, until it was too late, on being his own doctor. When he wanted something, he made it. If he couldn't make it, he did without or invented an alternative.

To some extent, my father's self-sufficiency was a matter of necessity, since he never had much money. But he seldom had much money mainly because he put so little value on it. I have little doubt that, had it been important to him, he could have made as much money as the next man. Self-sufficiency was also, for him, a matter of principle.

We raised our own food. It saved money, and he enjoyed it. But more than that, it seemed to him so logical, so obvious a thing to do that the rarity of it mystified him. That's what farmers do, he said: They raise food. If I am a farmer, and cannot feed myself, what sort of farmer am I? Does a tailor hire somebody to make his own clothes? Does a cobbler send his shoes out to be fixed? So he raised livestock for meat and milk, kept bees for honey and chickens for eggs, maintained an orchard for fruit, tended vegetables and berry gardens, raised wheat and ground it himself into flour. He didn't have the imagination to do less.

I tried out on him once an idea I had picked up in a vocational agriculture class. "Farming," I said, "is, after all, a business like any other. The purpose of farming is to make a living."

He flew into a rage. "Listen here, young man," he said. "The purpose of farming is to produce food for hungry people. It is a calling, not a living, and don't you ever forget it!"

In his economy, the guiding principle was the avoidance of waste. He understood the word to mean the unnecessary expenditure of life or the resources of life. Idling acres to curb excess production, therefore, made sense to him, but dumping milk didn't. Idle land was not wasted but merely lying fallow. It benefited the land, and, in any case, it was of some use to the rest of God's creation. But to spend re-

sources to produce food and then to throw it out merely because you couldn't make a profit on it—that to him was a waste, a kind of blasphemy. In the same way, it seemed to him not merely practical but morally good to heat our house with wood. It was, after all, available to us for the labor of harvesting it. Why should we burn coal, exhaustible and needing to be dug by somebody else, when we were perfectly capable of supplying our own replenishable heat at no expense to anyone? Shouldn't the coal be reserved for those who had no better alternative? My father's goal, in economic matters as in the rest of life, was

to be as little trouble to anybody else as possible.

I think he also meant to be as little trouble to himself as possible. He simplified his economic life so that the rest of his life might also be free and simple. In this he was Thoreauvian, although I doubt that he ever read Thoreau; and his habits, I think, gave his neighbors the same sort of trouble that Thoreau gave *his* neighbors.

My father worked diligently at farming, but he refused to work at it slavishly. He rose at sunrise but never earlier and, at least in the summertime, frequently went to bed shortly after sundown. He believed in long, leisurely meals, napped religiously after lunch, and kept the Sabbath faithfully. Sometimes our neighbors, particularly during the planting and harvesting seasons, rose long before daylight and worked late into the night, the headlights of their machines piercing the midnight blackness. But when it got dark, the work on our farm stopped, no matter what the urgency of time or weather. I myself, as a teenager, rose at four-thirty in the morning in the summertime to work one job, took a break for lunch, and then frequently worked a second job until ten or ten-thirty in the evening. My father made no effort to stop me, but he made it perfectly clear that he regarded such effort as utter madness, as I myself do now.

He believed that a life of constant toil was badly led, a life God never intended for anyone. His farming was important to him: a noble and a sacred calling. But other things were also important. He attended the flowering of wild plants, the singing of birds, the swarming of bees, the footprints of foxes. He cultivated his gardens. He walked in the woods. He prayed and meditated. In the winter, he helped his children to make igloos and snow tunnels. In the summer, he held them in his arms under the stars and sang cowboy songs to them in his sweet tenor voice.

For several years, we raised a couple of acres of cucumbers, an important cash crop. The project involved the entire family, and it might have been an unbearable drudgery. After the ground was plowed in the spring, everything was done by hand. The seeds were hand-planted in handmade hills, the patch was weeded with hoes, and, during the harvest season, we all spent three mornings a week, beginning before the dew had dried, picking the fruits, one by one, filling a peck basket, dumping it into the truck parked at the end of the field, filling another peck, and another, and another, until we were green and sticky to our elbows with the nauseating juice of cucumber vines and the sun was high in the sky and suffocatingly hot. It was backbreaking work, done on hands and knees, and excruciatingly boring, all the more because it had to be done meticulously. The cucumbers were graded by size, and the bigger they got, the less we were paid for them.

When we had gleaned the field, the cucumbers had to be hauled to the buying station in Willmar, forty miles away. We all piled into the truck, grateful for the chance simply to sit, and went together to Willmar, and, after we had sold the day's harvest, we went to the lake there and swam away the late afternoon and had a picnic in the shade and drove home at dusk, singing songs or falling happily asleep on our parents' shoulders. In my father's economy, those half-days of lounging at the lake were as vital as the mornings spent in the cucumber patch, and without the one he would not have had the other.

Sometimes this attitude resulted in a casualness toward life that could seem callous, although I think it was not. One fall morning after we children had gone to school, the creosote in the chimney of our house caught fire and started a blaze in the attic. Father was miles away, on his parents' farm, plowing. Mother was home alone. She ran to the neighbor's, borrowed the telephone, called the fire department, and then called Grandmother and asked her to fetch Father from the fields. The fire truck came, Grandmother came, several neighbors came, but not my father.

He worked, as usual, until noon and then returned for lunch, uncertain, of course, whether there was any lunch to be had. My sister and I had also walked home from school for lunch and were horrified when we rounded the grove, saw the commotion of neighbors and firefighters in the yard, and realized what had happened. Father arrived after us. When Mother saw him, she turned on him and yelled at him, the only time, I think, that she defied him in public. "Where have you been!" she screamed.

"I have been plowing the eighty," he said calmly.

"While our house was burning!" she shouted.

Continued on page 128

On a Scrap of Land in Henry County

Carol Polsgrove

WENDELL BERRY LIVES in a part of Kentucky that does not appear to change. Narrow lanes wind through quiet valleys; hawks light on roadside trees. Cars seldom pass the white-gabled houses. To my casual eye, it all looked pretty much as it did 18 years ago when I last visited Lanes Landing Farm near the town of Port Royal.

Since that first visit, I have taught in half a dozen universities and lived in half a dozen places. Berry, steady as the land around him, has stayed on with his wife, Tanya, in his steep-roofed house overlooking the Kentucky River, farming, writing essays, fiction, and poetry, and making occasional forays elsewhere to teach, lecture, or read from his work.

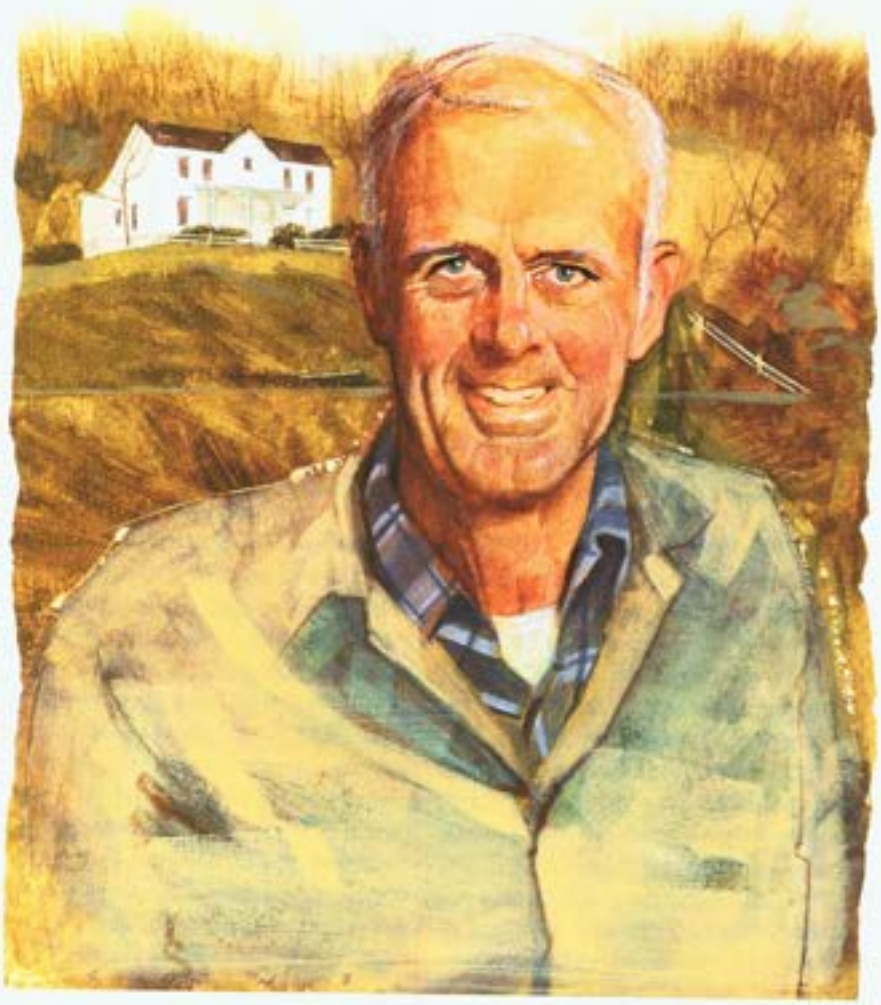
He has remained there not by chance, or because he had nothing better to do, but because 25 years ago he made a deliberate choice. He wrote about that decision in one of his early essays, "The Long-Legged House," the first piece I ever read by him.

The long-legged house was a two-room cabin built by his grandmother's bachelor brother back in the 1920s. As a young man, Berry often visited the house by the river.

"Clumsy in body and mind, I knew no place I could go to and feel certain I ought to be there," he wrote. But at the long-legged house he came upon days when he was "at peace, and happy. And those days that gave me peace suggested to me the possibility of a greater, more substantial peace—a decent, open, generous relation between a man's life and the world—that I have never achieved; but it must have begun to be then, and it has come more and more consciously to be, the hope and the ruling idea of my life."

He and Tanya married in May 1957, and spent the summer at the long-legged house. "In the life we lived that summer we represented to ourselves what we wanted—and it was *not* the headlong pilgrimage after money and comfort and prestige. We were spared that stress from the beginning. And there at the Camp we had around us the elemental world of water and light and earth and air. We felt the presences of the wild creatures, the river, the trees, the stars. Though we had our troubles, we had them in a true perspective. The universe, as we could see any night, is unimaginably large, and mostly empty, and mostly dark. We

WILLIAM CONE



"When you talk about marriage to a place, you're going to give up that other so-lucrative motive of the industrial world: the idea that you'd be better off somewhere else."—Wendell Berry

knew we needed to be together more than we needed to be apart."

Still, they left the house on the river. Berry studied with author Wallace Stegner at Stanford, sojourned in Italy on a Guggenheim fellowship, and taught at New York University. Not until 1964, when he was 30 years old, did he and Tanya and their two children return to Kentucky with the idea, this time, of staying. Teaching at the University of Kentucky in Lexington, he spent four days every week writing at the long-legged house.

When the nearby Lanes Landing property was put up for sale, Wendell and Tanya bought it as a summer place. But as they visited the house on weekends and walked the land, they "began to see possibilities" they could not resist.

"Our life began to offer itself to us in a new way, in the terms of that place, and we could not escape it or satisfy it by anything partial or temporary. We made up our minds to live there."

That commitment to a scrap of land in Henry County changed Wendell Berry as a writer. He has recalled for me what happened. "I was assuming that I was going to lead a literary life when I got back here," he said. But he found that his relationship with the place he had chosen could not be merely literary.

"When you live in your subject," he explained to me, "you can no longer think of it as raw material unless you're a monster. You don't think of your place as your subject any more than you think of your wife or children as your subject."

His sense of obligation to the region led him to write essays, thoughtful explorations of the world around him. "I began not just to see, but to ask why some things were here that were here, and why some things were not here that I felt needed to be here."

Why, he asked himself, had so many small family farms disappeared from the rural scene? He thought the question out to its economic, cultural, intellectual, and moral roots. The result was *The Unsettling of America: Culture & Agriculture*, published in 1977 by Sierra

Club Books. Wes Jackson, founder of The Land Institute, near Salina, Kansas, says the book "launched the modern movement for sustainable agriculture."

To agricultural specialists, the fact that one American farmer can feed 80 people may be a solution; to Wendell Berry it is a problem. We would be better off, he believes, if more than 3 percent of America's people farmed the land, using fewer chemicals and machines.

Why have we turned our land over to industrialists? Sheer arrogance, Berry replied in *The Unsettling of America*. Lured by "an almost occult yearning for the future," he wrote, we have given ourselves up to technological fantasy. "The great convenience of the future as a context of behavior is that nobody knows anything about it. No rational person can *see* how using up the topsoil or the fossil fuels as quickly as possible can provide greater security for the future, but if enough wealth and power can conjure up the audacity to *say* that it can, then sheer fantasy is given the force of truth."

Berry speaks in this book with the voice that has set him apart from most contemporary writers and intellectuals. He is no timid postmodernist offering long halls of mirrors, illusions and guesses, ironies and double meanings. Berry sounds as certain of the truth—the hardrock, basic truth—as if God had given it to him.

When I visited him this year, settling in for a morning's talk near the wood stove in his living room, I found Berry as fierce as ever. His manner was kind, as down-home and companionable as the chairs and book-laden tables around us, but his thoughts were unflinching.

Folding his tall frame into a worn living-room chair, his feet warmed by sock moccasins, he told me I was wrong to imagine that things hadn't changed in Henry County. Things *have* changed, he said: "I see a number of things that make me seriously afraid."

When he digs post holes, in some spots he can dig five feet down

through topsoil the whole way; in others he's in subsoil from the beginning. Ill-use and careless ways have worn down the land, "so you have to conclude that the country we're living in now is literally not the country that our ancestors inhabited."

America has turned its countryside into a Third World colony, he said. "The larger economy, the national economy that is really run for the benefit of a very few people, is preying upon and slowly destroying local communities everywhere.

"Everything we produce in rural America makes more money for other people than it does for those who produce it. They want our products as cheaply as they can be bought. They want to sell us their products as expensively as we can bear to pay for them. And they want our young people. And all this is working amazingly well. We're destroying rural America."

I thought of my own family: Just about everyone in my grandparents' generation lived on Kentucky farms, and none of their descendants do now.

Berry himself might easily have broken his family's long rural residency (they've been in this part of Kentucky since 1803); instead, he committed himself to a way of life that most educated folk of his generation rejected. And that commitment involved more than just living in the country and writing about it: He *imagined* his way deep into local culture.

In his fiction, Berry spins a web of country life as intricate and lovely as a spider's on a barbed-wire fence. In *The Memory of Old Jack*, *The Wild Birds*, *Nathan Coulter*, and other novels and stories, generations intertwine as parts of a community Berry calls a "membership." They live in one another's minds, rely on one another, care for one another, learn from one another how they best can live.

There is in these books an affection for country life so intense it resembles romanticism. Driving up through the country, I had been flooded by memories of great-aunts and uncles who had lived country lives that, to my recollection, had been lonely and hard. They

didn't seem anything like the lives in Berry's fiction.

"The fiction is imaginary, and it isn't a record," he said, reminding me that he'd straightened me out on this point once before. "When I talk about community I'm not talking about something I know out of the past. I know some things out of the past that seem to confirm the idea of community. But the idea of community was never comprehensive enough. It excluded certain people, such as blacks, or Indians, and it excluded the things of nature."

Berry has confronted those exclusions in his book *The Hidden Wound*, a meditation on his family's slave-holding past and his own boyhood experience with blacks on his grandfather's farm. Trying to come to personal terms with racism, the "hidden wound" that all American whites bear, he found a relationship between the exploitation of human beings and the exploitation of nature. By enslaving blacks, he observed, whites cut their own ties to the land. By assigning hard "hand labor" first to slaves, later to machines, whites avoided intimacy with nature. Disconnected, whites no longer cared, and what they no longer cared for, they destroyed.

"The white race in America has marketed and destroyed more of the fertility of the earth in less time than any other race that ever lived," he wrote.

Our culture's destructive flight from the physical is still very much on his mind. When we talked Sunday morning, stew and apples simmering on the stove, Berry complained, "The roadsides are littered with trash because people are eating more fast food, because nobody's giving time to food preparation."

As he explains in "The Pleasures of Eating," an essay in his newest collection, *What Are People For?*, the most natural of processes has become so industrialized that people have little idea of just what they are putting on their tables. They don't know where their food comes from or what's been added to or taken away from it. The food

industry "will grow, deliver, and cook your food for you and (just like your mother) beg you to eat it. That they do not yet offer to insert it, pre-chewed, into your mouth is only because they have found no profitable way to do so." Like industrial sex, Berry writes, industrial eating is "a degraded, poor, and paltry thing."

Certainly, dinner with the Berrys was just what you'd imagine an authentic country dinner would be: a variety of tastes, all seeming to come straight from the food itself, and the pleasure of company besides.

Tanya had come home from church by mealtime, bringing with her the Berrys' two granddaughters. We ate together at a big round table in the kitchen. The girls ate quietly, then climbed into Tanya's and Wendell's laps and listened to our conversation, occasionally trading places.

One of the remedies he offers for our current cultural mess is a shift to more regional economies—cities buying food and dealing with their garbage within their region.

"We've got to scale our economy down," he said. "We've got to have a more decentralized, locally adapted kind of economy." In "The Pleasures of Eating" he suggests things city-dwellers could do to help halt the decline of rural life: grow and prepare their own food so they know what it's all about, buy close to home, buy directly from farmers.

Is this enough? Of course not, and Berry knows it. "The capacity of people in the cities to do things directly for themselves is extremely limited," he told me. "They can't produce food. They can't produce building materials or the materials needed for clothing. They're so cut off from the natural sources of their livelihood and so far cut off from fundamental skills, most of them, that they can't directly do much of anything."

If rural America is to be saved, it will have to be saved by those who live there, Berry believes. "People who are left in the country are going to have to start helping each other again in practical and economic ways," he said. In

his own community, he has been trying to start a small-loan program, and has been to the state capital to protest other states' dumping their garbage in Kentucky.

In his work, Berry says again and again that we cannot save the land without saving the community that holds the knowledge of how we should care for the land, and why. In "The Work of Local Culture" (from *What Are People For?*), Berry discusses an old galvanized bucket that for 50 years has hung from a post on what was once his grandfather's farm. Every time he goes by that bucket, he looks in at the black humus forming from fallen leaves, animal droppings, and other natural debris. A good human community would be like that bucket, he says—it "holds local soil and local memory in place."

To some readers, Berry's preoccupation with the country renders him simply an ignorant Luddite, out of tune with his times. He stirred up a hornet's nest when *Harper's Magazine* reprinted a brief essay in which he explained why he does not use and will not buy a computer.

According to my reading of the essay, Berry uses pen and paper because he regards computer manufacturers as a conniving bunch who try to get people who don't need computers—like farmers and students—to spend significant sums of money on them. Moreover, computers depend on electricity, and he tries to use as little of that as he can. Finally, he likes his working relationship with Tanya, who types his work on an old Royal Standard and makes editorial suggestions in the margins.

Reader response was sharp-tongued. Reading Berry, said one letter-writer, was like "reading about the belief systems of unfamiliar tribal cultures." He suggested Berry try a quill pen.

Another (as Berry should have expected) took exception to his use of his wife as a typist: "Drop a pile of handwritten notes on Wife and you get back a finished manuscript . . . what computer can do that?"

The storm raged again earlier this year when *Utne Reader* reprinted the piece. Again, readers attacked Berry for maligning both computers and women. A friend who knew I was going to see him called me up and said, "You've got to tell Wendell to quit letting people reprint that article. It's going to ruin his reputation."


DAN CARNAGO

I was surprised, though, by the emotion in his own response to his critics. The intensity of readers' reactions, Berry wrote back in *Harper's*, suggested that he had

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obviously "scratched the skin of a technological fundamentalism that . . . cannot tolerate the smallest difference of opinion."

Two of the letter-writers, he wrote, had stereotyped and insulted his wife, "a woman they do not know," implying that she is "subservient, characterless, and stupid." Berry returned an insult of his own: these letter-writers "are audacious and irresponsible gossips." (I understood the strength of Berry's response a little better when Tanya told me there had been such an outpouring of anger that for a while they hated to get their mail.)

Berry is not accustomed to a negative response. His readers are usually respectful, even reverential. That reverence disturbs him, according to his friend Gene Logsdon, a writer-editor with a small farm in Ohio. Berry doesn't like being referred to as a prophet or put on a pedestal. "Wendell's got too much humor" for that. Besides, Logsdon told me, "Prophets usually tell you something you don't want to hear, but Wendell spoke my innermost thoughts."

Logsdon was working at *Farm Journal* when he read "The Long-Legged House." He interviewed Berry and found his example so powerful that he wound up quitting his job and going back to his homeland to farm and write.

Berry's old friend Ed McClanahan remembers mailing him the manuscript of a novella set in farm country. McClanahan had grown up in a small Kentucky town, but he didn't know much about farming, and he'd made a lot of mistakes. "Wendell went through the 120-page manuscript and made a conscientious list of all those errors," said McClanahan. "It was a great kindness."

McClanahan, Logsdon, Wes Jackson, and several others are part of a network of writers Berry talks to or corresponds with regularly. They seemed to me to make up a community of people trying to preserve small-scale farming and farm communities. But Berry was quick to correct me. The group, mostly separated by many miles, can only be a "network," he said, not a community. "The people in your *network* are not going to put your livestock in when they get out in the road."

The members of this network do, however, send each other manuscripts and books, which they sometimes dedicate to each other. Fellow writers, friends, and family are, Berry says,

"constant sources of help, instruction, and inspiration to me. As a writer, I'm a sort of assembly or committee."

Others in the network are quick to credit Berry for his contributions. Wes Jackson calls him "our most profound spokesman. He's a constant source for me. We talk probably every week. I'm writing a speech right now, and I was thinking that much of what I have to say had its origins with Wendell."

Logsdon says, "He's clearly the beacon, the lighthouse, to whom everybody turns for the real, pure idealism of the movement." But to Logsdon, as to others, Berry is also a friend, "a really good companion, a man to ride the river with who thinks the way I do. Everyone who gets to know him realizes he's not just air. He really lives and believes what he says he lives and believes. That's to me a surpassing marvel."

Berry's front window looks straight out across the river valley to a ridge of hills. Before I said goodbye, we studied the tranquil scene together.

In the center of the frame, in the valley on the other side of the river, stood an abandoned tenant house. I wondered why people didn't tear down those tattered, empty buildings; Berry wondered why people didn't still live in them.

For Berry, a commitment to a place is like marriage. "When you talk about marriage to a place," he said, "you're talking about final commitment. You're not going to leave. You're going to give up that other so-lucrative motive of the industrial world: the idea that you'd be better off somewhere else or with somebody else.

"If you live in the presence of your history, it's harder to be arrogant. If you are not living in the presence of what you've done, which will always include some damage, it's too easy to be arrogant or silly. That's why some kind of social stability is necessary so that people aren't, all the time, escaping from their own history and the damage they've done.

"I live in this commitment all the time, knowing very well how attractive mobility is. I'd really like to be loved by somebody who doesn't know me, who would be susceptible to my charm." His eyes twinkled, as they often do; at 56 he is an attractive man, capable of taking pleasure in his own delightfulness. "I appreciate, exquisitely, how fine that would be. But I know it wouldn't last, and that I couldn't disguise myself for more than, oh, maybe 48 hours." His big laugh poured out.

"And I know it would be really nice, as I've said to Tanya, to go and get on the fifth floor of some damn apartment house and quit this getting up at night with the sheep."

That reminded him his ewes needed seeing to, so he went off for a while. Not long after, I drove down the wandering road, imagining what it would be like to pick a place on Earth and stay there, and take care of it. ■

CAROL POLSGROVE, *a native of Kentucky, is an associate professor of journalism at Indiana University.*

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Mexico's Tarahumara Indians (inset) fear logging will despoil Copper Canyon.

Banking on Mexico's Forests

SIERRA MADRE OCCIDENTAL

In August 1989, when the World Bank agreed to lend Mexico $45.5 million for a logging and forest-management project in the rugged Sierra Madre Occidental, it made environmental protection one of its top priorities.

Now conservationists north and south of the Rio Grande are saying that the project may be doing the Sierra Madre more harm than good. They contend that the lives of indigenous people there are being disrupted, that any hope of establishing a world-class national park in the region is being dashed, and that the land's oak- and pine-covered watersheds are being destroyed, with effects that could eventually be felt as far away as Texas.

"People have been cutting the area for over a century," says Bruce Rich, chair of the Environmental Defense Fund's (EDF) international program. "But the World Bank loan is a big infusion of cash, and it will end up accelerating the logging."

The forestry scheme, which got underway late last year, is intended to help the nation correct its trade deficit by reducing dependence on imported paper pulp. It calls for the extraction of more than 4 billion board-feet of lumber from nearly 20 million acres of land over six and a half years. The Bank's official project outline calls for monitoring all roadwork and timber harvesting, researching ways to protect endangered animal and plant species, and strengthening the area's existing national-park-and-preserve administration. Yet dollar figures in the outline indicate the World

Like Nitti, many environmentalists are concerned about the part of the development plan that calls for the Army Corps of Engineers to dynamite some of the bay's reefs—coral systems that not only help generate world-class waves, but are themselves storehouses of biological diversity.

Hawaii's Department of Transportation, meanwhile, would oversee the construction of the new berths. At present, the harbor is home to both fishing vessels and tour boats; the expansion would primarily accommodate more tour boats, which ferry divers and snorkelers to the famous Molokini coral reef diving area, run whale-watching expeditions, or operate so-called "booze cruises" and sunset rides on the bay. Some of these craft are larger and create more underwater noise (which frightens the humpbacks) than the fishing vessels.

The Pacific Whale Foundation's Forestell is promoting the idea that improving the harbor doesn't have to mean enlarging it. He would like to see a limitation on the number of boats in the harbor, seasonal regulations on speed limits, and the use of sound attenuators to lessen underwater noise. "It's a large and complicated issue," he says, "and not as simple as 'either we build the extra berths or we don't.'"

In the early 1980s, more than a decade after Congress first authorized the harbor development, both the DOT and the Army Corps produced environmental impact statements covering the project. But construction has not appeared imminent until recently, prompting activists to object to the state's reliance on studies they claim were originally inadequate and are now woefully out of date. Their arguments convinced the Corps to begin preparing a supplemental study, which is expected to take at least nine months to complete.

Local residents concerned about the harbor's future have formed the Protect Maalaea Coalition. They hope to convince their neighbors and the public that the project is not in the best interests of Maalaea Harbor, the whales, or the waves. —*David Rompf*

SIERRA NOTES

The National Forest System is the latest Sierra Club guide to the public lands of the United States. The 12-page booklet provides a concise overview of our nation's forests and examines the Forest Service's mandate to manage them for recreation, timber, and wilderness preservation. Regional maps help readers locate each of the 156 forests; also provided are the addresses and phone numbers of local and regional Forest Service offices.

Copies of this booklet and five others in the Sierra Club *Public Lands* series—*The National Park System; The National Trails System; The National Wildlife Refuge System; The National Wild & Scenic Rivers System;* and *The National Wilderness Preservation System* —are $1.50 each for Sierra Club members, $2 for non-members, from Sierra Club, Dept. SA, P.O. Box 7959, San Francisco, CA 94120. All six booklets may be ordered for only $8 ($10 for non-members). Please include $1.75 for postage and handling with each order.

Want a few ideas on how to save the planet? The Sierra Club's four new *What You Can Do* brochures provide activists with advice on ways to help save tropical rainforests, solve the garbage crisis, stabilize world population, and protect our coasts from offshore oil development. Copies of the rainforest brochure are 50¢ each for Sierra Club members, $1 for non-members; the remaining brochures are 25¢ each, 50¢ for non-members. Send check or money order to Sierra Club, Dept. SA, P.O. Box 7959, San Francisco, CA 94120. Include $1.75 for postage and handling with each order.

The Last Great Wilderness is a multimedia slide show about the future of the Arctic National Wildlife Refuge. The presentation includes a look at the Gwich'in people, who have lived in the region for thousands of years. The slide presentation also warns of the oil industry's attempts to exploit the fragile ecosystem for short-term profit.

Sierra Club groups and other environmental organizations may arrange a showing of this slide program at no charge (donations gladly accepted) through The Coalition for Our Earth, P.O. Box 335, Sonoma, CA 95476; phone (707) 996-5527. A videotape version of the show is also available, either on loan (copying is encouraged) or for purchase ($25).

The Ecologist, a respected British environmental journal, is now distributed in the United States and Canada. Founded in 1969 by Edward Goldsmith, the bimonthly magazine reports primarily on international issues, and often features lively debate on controversial topics. A one-year subscription is $30 ($25 for students who provide proof of school enrollment) from *The Ecologist*, MIT Press Journals, 55 Hayward St., Cambridge, MA 02142. Checks must be drawn on U.S. banks and in U.S. currency.

Creating Our Future, a national youth environmental group, has produced a training manual, *How to Organize a Rainforest Week at Your School.* The booklet contains background information on rainforest issues and a list of ideas and "how-to's" for direct-action campaigns and fundraisers. Copies of the manual are $5 from Creating Our Future, 398 North Ferndale, Mill Valley, CA 94941.

American Youth Hostels (AYH), which provides low-cost, dormitory-style accommodations throughout the United States, has produced *Creative Partnerships: A Complete Guide to AYH Hostels on Public Lands.* This booklet describes 34 hostels, including several of historical significance. For a copy of the booklet, write American Youth Hostels, Dept. CP, P.O. Box 37613, Washington, DC 20013-7613. Include $1 for postage and handling. ■

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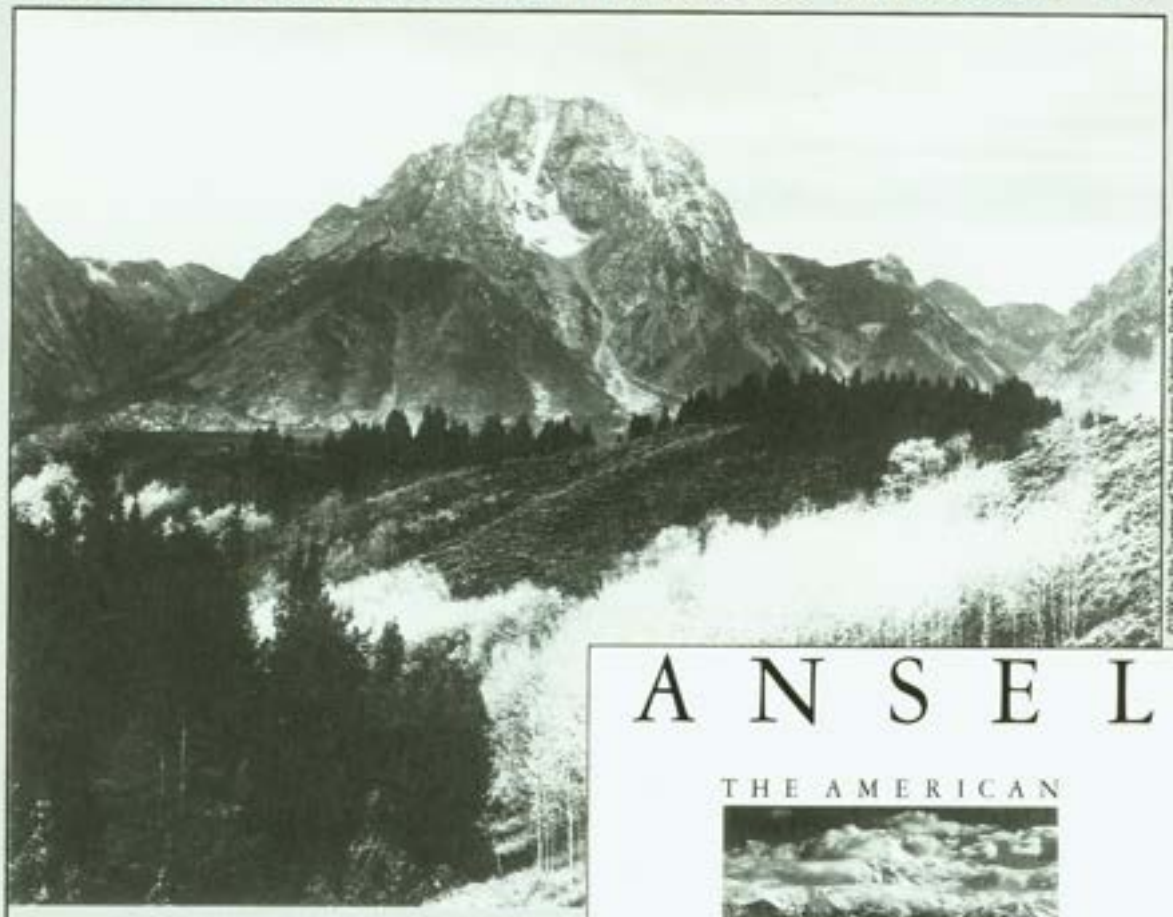

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Wind at Work

Sara van Dyck

We can't see the wind, but it is Earth's great mover. It carries soaring hawks over prairies, sends sailboats across lakes, and shapes the landscape. Most grasses and more than 10,000 species of flowering plants count on it to carry their seeds to new growing sites. Some insects even travel on the wind, such as the young spiders that weave tiny webs like sails and wait for a breeze to launch them into the air.

Winds are caused when the sun heats air unevenly, setting it in motion. During the day, the land heats more quickly than the ocean. The warm air above land rises, and cool air from the ocean moves in to take its place. The result is a cool sea breeze. You might also feel a chilly wind in a valley at night. The air above hillsides, warmed during the day by the sun, cools off after sunset. As the temperature drops, the air falls and pours down the slopes into the valley. The great winds that circle Earth exist because land near the equator is heated more by the sun than land closer to the poles.

Wind causes weather changes around the globe. Clouds holding water vapor from the oceans are blown toward shore and shed their rain on land. The weather in the United States is affected by large air masses that sweep across the continent. During winter, cold, dry air from the Arctic pushes south, bringing shivers to people as far away as Texas and Florida. The summer thunderstorms that the southern and midwestern states experience ride up on warm winds from tropical air masses in the Gulf of Mexico. Wind also helps clean up civilization's mess: Without air currents to blow away smog and fumes, large cities would smother in air pollution.

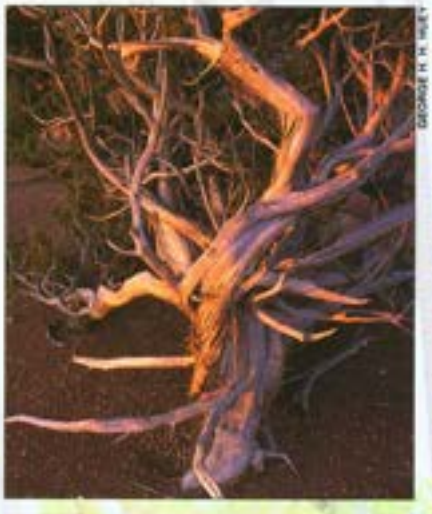
Since ancient times people have found ways to use wind. Most of today's windmills look like airplane propellers spinning atop towers. Some are used alone in remote locations; others are planted on windy hillsides or mountain passes in huge arrays called wind farms.

Because wind is difficult to harness, we can use only a tiny part of its total energy. But when we see ocean waves breaking, sand whipping across a desert, or clouds streaking across the sky, we're reminded that the wind is always at work. ■

SARA VAN DYCK *is a writer in Santa Monica, California.*

Background: *Wind can be a great destroyer. More than 100 tornadoes strike the United States each year. These high winds may last only a few minutes, but they can whirl at more than 200 miles per hour. Hurricanes, which form over tropical oceans but often blow onto shore, can last for days.*

GEORGE H. H. HUEY



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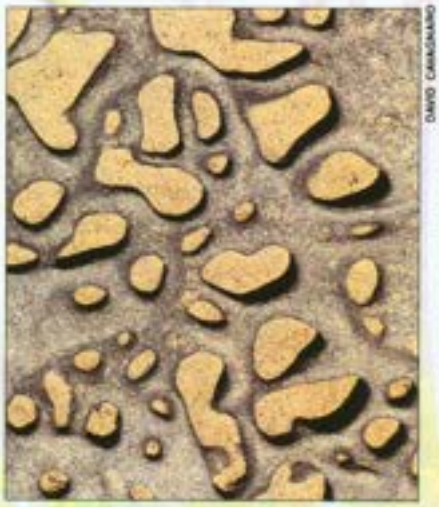


DAVID CAVAGNARO

▲ Though wind itself is invisible, its effects can be seen all over Earth. Wind creates northern blizzards and prairie dust storms. On mountaintops or ocean cliffs it twists and flattens trees. In the desert it piles up and tears down sand dunes, and sculpts rocks into strange shapes.

COMSTOCK

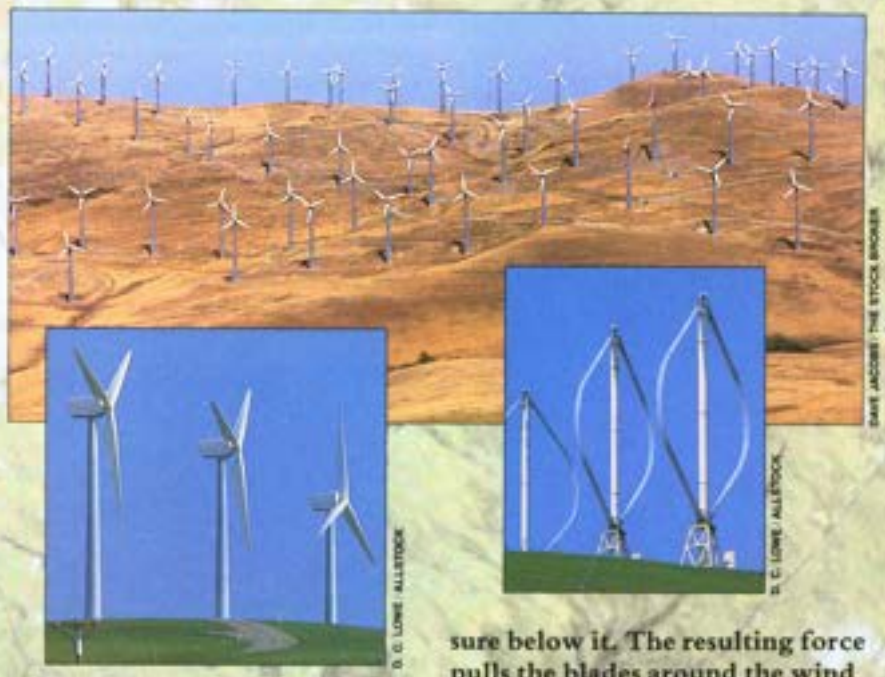
▲The arid American West was won partly with windmills. As homesteaders headed west after the Civil War, they used hundreds of thousands of windmills to pump underground water for their families and to irrigate their fields. When the railroads first crossed the continent, windmills along the routes pumped water for the locomotives.

▼Windmills like these have been used in Europe since the 12th century. Just as the wind pushes a sailboat forward with its pressure, it pushes against the blades of a windmill and causes them to turn a shaft. Inside the tower, a set of gears rotates heavy millstones. The Dutch also used wind power to turn a large wheel that scooped up water and lifted it into drainage canals.

COMSTOCK

►The world's largest wind farms are in California, where one area, Altamont Pass east of San Francisco, contains more than 6,000 turbines. Using wind to provide energy has its advantages: It is renewable, doesn't use up natural resources, and produces no pollution or dangerous materials. But wind farms can work only in areas that have average winds greater than 12 miles per hour all year long.

Modern windmills are complex turbines (engines) that produce electrical energy. A windmill blade acts like a sail: When air flows over the curved section of the blade, it travels faster. This produces less pressure above the blade and more pressure below it. The resulting force pulls the blades around the wind turbine's shaft, which turns a generator that produces electricity.



DAVE JACOBS/THE STOCK BROKER

D. C. LOWE/ALLSTOCK

D. C. LOWE/ALLSTOCK

1991 Spring Trips

Discover the special beauty of spring by backpacking in the Grand Canyon, biking in California's coastal redwoods, or trekking to the Annapurna Sanctuary in Nepal. The following pages include brief descriptions of the exciting winter and spring trips planned by our volunteer leaders. Whether you want to ski at the tip of Keweenaw Peninsula on Lake Superior or canoe the Okefenokee Swamp in Georgia, there's a Sierra Club outing that's just right for you. ♦ Sierra Club trips are cooperative ventures with an average of 12 to 25 participants. Trip members share camp chores, including food preparation and cleanup, an aspect of the outings that most people enjoy. ♦ To order individual trip brochures, send in the coupon on page 115. Reservations are now being accepted for all spring trips, as well as for 1991 foreign trips. Before sending in a completed reservation application, please read the reservation/cancellation policy on pages 114 and 115. Watch for a complete listing of 1991 trips in the January/February issue of *Sierra*.

GARY LADD

Camping in Death Hollow Wilderness, Utah

Backpackers in Grand Canyon National Park, Arizona

BACKPACK

Experience the wilderness on a rewarding and adventurous backpacking trip. Carrying everything you need for the trip in a pack adds an extra dimension of freedom and satisfaction to your outing.

Trips vary in length and difficulty. We have divided the trips into five categories: Light (L) trips cover up to 35 miles in four to five travel days, the remaining days being layovers. Moderate (M) trips may cover longer distances of up to 55 miles and involve more cross-country routefinding. Strenuous (S) trips cover as many as 60 to 70 miles with greater ups and downs and continuous high-elevation travel. Light-Moderate (L-M) and Moderate-Strenuous (M-S) are intermediate ratings. Individual trip brochures explain the ratings in more detail.

Leaders are required to approve each applicant before final acceptance, and will ask you to write responses to their questions. These responses help the leader judge your backpacking experience and physical condition.

Desert Winter, Big Bend Park, Texas—January 27–February 8, 1991. If your idea of backpacking doesn't include snowshoes, cross-country skis or frostbite, then this trip is for you. Big Bend National Park contains a variety of landforms and ecosystems. Our route will begin high in the Chisos Mountains and wind through fantastic volcanic monoliths down to the rugged canyon of the Rio Grande. Water and food caches will help lighten the load on our cross-country trip. (Rated S) *Leaders: John Lemon Sellers and Sid Hirsh. Price: $630; Dep: $100.* **[91367]**

Florida Trail Odyssey: Ocala Forest—February 17–23, 1991. Warm days and cool nights make this winter outing a perfect cure for cabin fever. Expect variety on this 65-mile trail: We'll pass by ponds, cross cypress and gum swamps on winding boardwalks, traverse rolling longleaf-pine forests and clusters of dwarf livecoaks, and see much wildlife, from songbirds to black bears. (Rated L-M) *Leader: Mark Lidd. Price: $315; Dep: $50.* **[91031]**

Condor Country, Los Padres Forest, California—March 18–23, 1991. Will the condor ever again soar over its native habitat? This ocean-end of Southern California's transverse ranges is rich in history and natural springtime beauty. Our six days of backpacking include a visit to Indian petroglyphs and opportunities for swimming, relaxing, and nature-noting. Suitable for enthusiastic beginners or laid-back veterans. (Rated M) *Leader: Louise "Letty" French. Price: $210; Dep: $50.* **[91032]**

Escalante Canyon, Glen Canyon Recreation Area, Utah—April 6–13, 1991. Join our seasoned group of canyoneers as we explore remote areas of the Escalante Canyon. Though we will hike for two days along the Escalante River, most of our time will be spent in Stevens Canyon, along the rimrock on the Waterpocket Fold, and in Moody Creek and Fools Canyon. (Rated S) *Leader: Steve Allen. Price: $365; Dep: $50.* **[91033]**

Galiuro Mountains, Galiuro Wilderness, Arizona—April 14–20, 1991. On the edge of the Sonoran Desert, the mysterious and seldom-visited Galiuro Wilderness is a primeval mix of mountains and canyons. Our route will take us over agave- and cactus-studded ridges to lushly forested canyons with running streams and pools. Some of our hiking will be cross-country, and elevations will vary between 4,500 and 7,700 feet. One layover day is planned. (Rated M-S) *Leader: Barry Morenz. Price: $270; Dep: $50.* **[91034]**

"Mystery" Canyons, Utah—April 14–20, 1991. Come and explore some of southeastern Utah's beautiful and fascinating canyons. We will see relics of the ancient Anasazi, marvel at fantastic rock formations and sandstone cliffs, and delight in cool, refreshing pools. Spring will be evidenced by colorful wildflowers and cactus blossoms. Anticipate brilliant days and nights brimming with stars. This trip is for the adventurous backpacker with prior experience. (Rated M-S) *Leader: Nomi Elliott. Price: $335; Dep: $50.* **[91035]**

Carmel River, Ventana Wilderness, California—April 19–26, 1991. On our spring sojourn we'll explore the ridges and rivers of the Big Sur coast country. Camps will either be on high ridges with expansive views or in two river valleys, where wildflowers bloom in abundance. Experienced backpackers and well-conditioned beginners are welcome. (Rated M) *Leader: Bob Berges. Price: $230; Dep: $50.* **[91036]**

Grand Canyon in the Spring, Arizona—April 20–28, 1991. Experience the grandeur of the Grand Canyon from the Tonto Plateau and the power of the Colorado River from the beaches of Granite, Crystal, Boucher, and Hermit rapids. We'll enjoy fine vistas, wildflowers, and canyon streams—and have two layover days for relaxing or further exploration. (Rated S)

Leader: Judith Harper Slepian. Price: $295; Dep: $50. **[91037]**

South Rim, Grand Canyon Park, Arizona—April 20–28, 1991. If you're an experienced and dedicated canyon backpacker, you'll enjoy our route down the old—and very steep—Salt Trail. Then we'll wind our way through thickets of willow and tamarisk along the Little Colorado River, hike the Beamer Trail overlooking the Colorado River to Tanner Canyon, follow the Escalante Route to Red Canyon, and ascend the New Hance Trail to the South Rim. (Rated S) *Leader: Bert Fingerhut. Price: $375; Dep: $50.* **[91038]**

Thunder River and Deer Creek, Grand Canyon Park, Arizona—April 21–27, 1991. Since you couldn't see all of the Grand Canyon in a lifetime, the best place to start is with the scenic North Rim. After descending into the canyon at Indian Hollow, we cross the Esplanade to Deer Creek Falls, where we'll have our first layover day. We'll explore Surprise Valley on our way to the explosive headwaters of Thunder River, where another layover is scheduled. For experienced hikers. (Rated S) *Leader: Bob Cole. Price: $330; Dep: $50.* **[91039]**

Druid Arch, Canyonlands Park, Utah—April 28–May 4, 1991. Easy backpacking interspersed with three layover days give us plenty of time to explore the exotic Needles District. We'll enjoy Chesler Park (a desert meadow surrounded by colorful rock spires), climb Druid Arch, and visit pristine Virginia Park. In Upper Salt Creek, we'll find a canyon jam-packed with Anasazi ruins, and we'll search for well-known pictographs, including Four Faces and All-American Man. (Rated L-M) *Leader: Ted Doll. Price: $390; Dep: $50.* **[91040]**

Grand Canyon Sampler: Sowats Spring, Thunder River, and Indian Hollow, Arizona—May 4–11, 1991. This trip is a great introduction to the Grand Canyon—from remote Sowats Spring to the roaring Thunder River. We'll hike into the narrows of Jumpup Canyon, and enjoy quiet, hidden waterfalls on our way to splendid 120-foot Deer Creek Falls. Panoramic views will be ours as we climb from the Esplanade to Indian Hollow. No layover days are planned. For experienced hikers only. (Rated S) *Leader: Gene Glenn. Price: $270; Dep: $50.* **[91041]**

White Canyon Exploration, Southeastern Utah—May 4–14, 1991. Starting at Natural Bridges and ending near the Colorado River, we'll explore the wild yet accessible White Canyon and Gravel, Cheesebox, and Hideout side canyons. Similar to the Maze, this country invites intimate exploration. Find out why only a portion has been included in the BLM wilderness inventory. Weather permitting, we will swim the "Black Hole." Food and water caches will help lighten our load. (Rated M) *Leader: Jeffrey Jackson. Price: $545; Dep: $100.* **[91042]**

Navajo Mountain and Rainbow Bridge, Arizona—May 5–11, 1991. As the spring wildflowers bloom, we will delight in the multi-hued canyons, towering domes, arches, slickrock, and sparkling creeks and pools around the base of Navajo Mountain, the 10,388-foot hump on the Navajo Reservation in northern Arizona. There will be ample time for photography, swimming, and a hike to Rainbow Bridge, the largest natural arch in America. (Rated M) *Leader: Nancy Wahl. Price: $270; Dep: $50.* **[91043]**

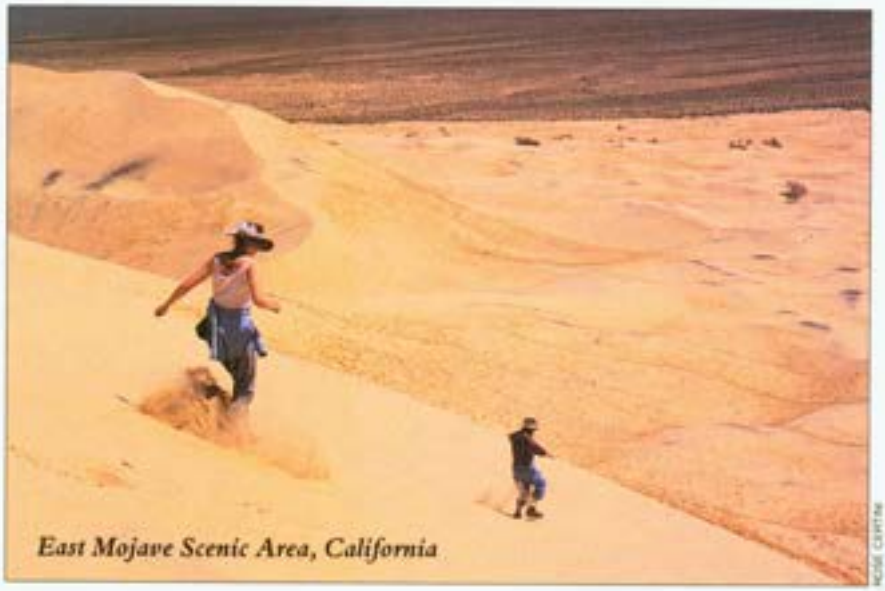
Forests and Desert Canyons: Gila Wilderness, New Mexico—May 11–18, 1991. As wildflowers open and cacti bloom, we "river-walk" in canyons along the Middle Fork of the Gila River. Following ancient Indian routes, we'll ascend to parklike forests, explore cliff dwellings and natural hot springs, and watch for abundant wildlife from coyotes to wild turkeys. A car-key exchange with participants on trip 91045 permits us to enjoy a 50-mile, one-way backpack. (Rated M) *Leader: Irene Penfield. Price: $370; Dep: $50.* **[91044]**

Mogollon Rim, Gila Wilderness, New Mexico—May 11–18, 1991. Recommended for Mexican wolf and grizzly bear reintroduction, the Gila was America's first designated wilderness. We will travel from desert to subalpine forests, climb Mogollon Baldy (where we'll have a view that extends all the way to Mexico), explore ancient Indian cliff dwellings, and swim in pot-holed creeks. A service day is planned to survey the endangered Gila trout. A car-key exchange with participants on trip 91044 permits us to enjoy a 50-mile, one-way backpack. (Rated M-S) *Leader: David Morrison. Price: $370; Dep: $50.* **[91045]**

Cranberry Wilderness, West Virginia—May 12–18, 1991. The Cranberry Wilderness and adjacent backcountry constitute the largest wilderness area in the East. Here broad meadows surround the deep, narrow valleys of the Williams and Cranberry rivers. Alternate moving and layover days give us time for exploring, picture-taking, and relaxing. We'll cover about 30 miles on our moving days. (Rated L-M) *Leader: Fred Gooding. Price: $280; Dep: $50.* **[91046]**

Arch Canyon, Utah—May 19–25, 1991. Years of wind and rain have formed magnificent arches in sandstone country dotted with pines and firs. Arch Canyon, a significant archaeological site, contains ancient Anasazi cliff dwellings located in alcoves high on the canyon walls. We'll explore these sites and many intriguing side canyons in this unique region of the Southwest. (Rated L-M) *Leader: Belva Christensen. Price: $245; Dep: $50.* **[91047]**

Parunuweap Canyon, Zion Park, Utah—May 20–27, 1991. The East Fork of the Virgin River flows through Parunuweap Canyon, which has numerous side canyons for dedicated backpackers to explore. On our last two days we'll hike cross-country high among ponderosa pines and Navajo sandstone. (Rated M-S) *Leader: Bert Fingerhut. Price: $455; Dep: $50.* **[91048]**



East Mojave Scenic Area, California

ROSE CRAFTON

Skyline to the Sea Trail, Big Basin Redwoods Park, California—May 21–28, 1991. Big Basin was created aeons ago by uplift and erosion. The terrain is complemented by a variety of mixed evergreens that separate the coast redwoods from the chaparral community. Springtime offers waterfalls, extensive wildflower gems, and a variety of riparian vegetation. Plans include a mid-trip food cache to lighten loads and a layover day near park headquarters. (Rated L) *Leader: Wes Reynolds. Price: $340; Dep: $50.* **[91049]**

Death Hollow Wilderness, Escalante, Utah—May 25–June 1, 1991. On this ambitious one-way trek, we'll visit some of the wildest canyon country in southwestern Utah. Starting on the 9,000-foot Aquarius Plateau, we'll scramble and swim through a spectacular but lightly traveled slot canyon. We'll have time to search for an old stagecoach route and learn about the region's geology and botany as we descend into the main drainage of the Escalante River. (Rated S) *Leader: Sue Kozacek. Price: $425; Dep: $50.* **[91050]**

BASE CAMP/ HIGHLIGHT

America's Tropical Paradise, Virgin Islands Park, Virgin Islands—March 22–28, 1991. See description for trip 91060 below. *Leader: Jim Absher. Price: $570; Dep: $100.* **[91055]**

Historic Landmarks in the Old South, Louisiana and Mississippi—March 24–30, 1991. Lovers of history can step into the past on this bed-and-breakfast tour of plantations and gardens. Your southern experience begins in the French Quarter of New Orleans, takes you across Louisiana to Natchez, Mississippi, and north to the Civil War battleground of Vicksburg. Accommodations include antebellum mansion bedrooms styled in the romantic tradition of the Deep South. There will be ample free time for strolling and biking. *Leader: Bill Carroll. Price: $820; Dep: $100.* **[91056]**

East Mojave Scenic Area, California—March 24–31, 1991. The beauties of the California desert are most splendid in spring—the ideal time to visit the region proposed as Mojave National Park. From our 5,600-foot camp, we'll take leisurely-to-moderate dayhikes to view spectacular canyons, 600-foot-high sand dunes, cinder cones, volcanic spires, and ancient cultural sites. *Leader: Rose Cortini. Price: $410; Dep: $50.* **[91057]**

Anza-Borrego Natural History, Anza-Borrego Park, California—March 31–April 6, 1991. Come and enjoy easy-to-moderate dayhikes in California's largest state park, where we'll marvel at spring wildflowers and the varied scenery—mountains, desert, and an inland sea. We will be accompanied by a naturalist who is also an expert in geology and climatology. At night, we'll view the constellations through a telescope. *Leader: Alan Stahler. Price: $420; Dep: $50.* **[91058]**

Havasupai Reservation, Grand Canyon, Arizona—April 7–12, 1991. On our stock-supported trip, we'll descend 2,500 feet in 11 miles to the remote Havasupai Reservation. Three layover days give us time to hike, explore the reservation, or simply rest and swim at Havasu Falls and pools. We hike back to the roadhead in two days. This leisurely trip is ideal for experienced old-timers and in-shape beginners. *Leader: Serge Puchert. Price: $650; Dep: $100.* **[91059]**

America's Tropical Paradise, Virgin Islands Park, Virgin Islands—April 14–20, 1991. Much of the island of St. John and the coral reefs in the surrounding sea make up Virgin Islands National Park. We will stay in rustic, beachfront cottages on the north shore, where opportunities abound for snorkeling, hiking, and sunbathing. In our rented vehicles we'll explore Cruz Bay and visit some out-of-the-way places. Leader approval required. *Leader: Ray Abercrombie. Price: $570; Dep: $100.* **[91060]**

Havasu Canyon, Grand Canyon, Arizona—April 14–21, 1991. Havasu Canyon is on the remote and beautiful Havasupai Reservation in western Grand Canyon country. Horses will carry our duffels, food, and commissary equipment to a base camp located between Havasu and Mooney waterfalls. We'll spend our days taking short hikes or swimming in the pools below the falls. Our last night will be at Indian Lodge in Supai village. *Leader: John Malarkey. Price: $560; Dep: $100.* **[91061]**

Oak Creek Canyon and Sedona: Red Rock Country in Arizona—April 28–May 5, 1991. Come enjoy leisurely dayhikes amidst soaring red sandstone buttes and mesas in evergreen forests. We'll view ancient Indian habitats, photograph desert wildflowers, and on our last day go to either the Grand Canyon or Sedona. Our shared first-class accommodations will be in resort townhouses in Oak Creek Canyon. We have the choice of dining out or preparing our own meals. Two group dinners are included in the trip price. *Leader: Ben Cohn. Price: $375; Dep: $50.* **[91062]**

Note: See water trips for other base-camp outings.

BICYCLE

Coastal Redwoods to the Golden Gate, California—May 18–25, 1991. Experience rugged ocean landscapes and towering redwoods on our ride from Eureka down Northern California's Route 1. The Golden Gate Bridge and San Francisco are our goals as we feel the wind and fog and soak up sun along the way. Our ride has some long distances and challenging portions. We'll camp in state parks, and a sag wagon will provide support. Leader approval required. *Leader: Charles W. Hardy. Price: $460; Dep: $50.* **[91067]**

Note: See foreign trips for another bicycle outing.

San Juan Mountains, Colorado

TOM SLABACK

FAMILY

Everglades Park, Florida—December 28, 1990–January 2, 1991. Come enjoy this unique ecosystem with the members of your family. We will canoe through dense mangrove, in manmade canals and on Florida Bay, and hike on jungle trails and along the coastline. Learning about the "River of Grass" through guided self-discovery, we will emphasize developing our observational skills. This trip is suitable for children six years and older. *Leader: Martin Joyce. Price: adult $280, child $185; Dep: $100 per family.* **[91365]**

FOREIGN

Please note that foreign trip prices are subject to change and do not include airfare. Most foreign trips are tier-priced. For an explanation of tier-pricing, see page 114. Leader approval is required for all foreign trips.

• ASIA •

Springtime in the Annapurna Sanctuary, Nepal—March 16–April 5, 1991. Rhododendrons in full bloom await us on this 17-day circular trek through picturesque Gurung villages en route to the glacier-covered amphitheater of the Annapurna Sanctuary (13,500 feet), where we'll be surrounded by peaks ranging from 20,000 to 26,545 feet. After trekking to both Annapurna and Machhapuchhare base camps, we'll return via the Ghorapani Ridge, with views of Dhaulagiri. *Leader: Peter Ouvens. Price: $1,565 (13-16) / $1,720 (12 or fewer); Dep: $200.* **[91805]**

Dhaulagiri Himal: French Col and Hidden Valley, Nepal—April 13–May 9, 1991. This challenging trek will take us through rhododendron forests and cultivated fields to one of the most dramatic and beautiful regions of the Himalaya. From Pokhara, we ascend Mayagdi Khola Valley to Dhaulagiri base camp, over French Col, and into Hidden Valley. One last push takes us over Dhampus Pass to Jomosom. This is a strenuous, high-altitude trek. *Leader: John DeCock. Price: $2,365 (10-12) / $2,590 (9 or fewer); Dep: $200.* **[91810]**

Rajasthan Desert Kingdoms, India—September 11–29, 1991. This trip to the fascinating Indian state of Rajasthan could be your adventure of a lifetime. We'll combine touring with a four-day camel safari across the remote dunes of the Thar Desert. Then we'll visit the cities of Jaipur and Jodhpur, the desert citadel of Jaisalmer, and the luxurious lake-city of Udaipur. Our trip begins and ends in New Delhi. *Leader: Bob Madsen. Price: $2,265 (12–15) / $2,515 (11 or fewer); Dep: $200.* **[91865]**

Happy Birthday, Confucius! China Study and Walking Tour—September 25–October 14, 1991. The focus of our fascinating tour is the celebration of Confucius' 2,542nd birthday in Qufu, his hometown and the center of Confucianism, the heart and soul of Chinese philosophy and culture. We'll also visit the Great Wall and Forbidden City, and have the option to climb Tai Shan, the holiest of mountains. Among many exciting attractions, perhaps what we'll enjoy most are honest, open discussions with the Chinese people—even during today's trying times. *Leader: Phil Gowing. Price: $2,585 (12–15) / $2,840 (11 or fewer); Dep: $200.* **[92505]**

Annapurna Circuit, Nepal—October 5–31, 1991. Three features make this one of Nepal's finest treks: unsurpassed alpine scenery, 16,000 vertical feet of distinct life zones, and the area's remarkable cultural diversity. In 23 trekking days we will pass sub-tropical jungle, a frozen lake, scores of villages, and two great Himalayan gorges while the 16,000-foot peaks of the Dhaulagiri and Annapurna massifs tower over us. *Leader: Jerry Clegg. Price: $2,040 (12–15) / $2,250 (11 or fewer); Dep: $200.* **[92515]**

LAURIE ANN BARCLAY

Trekkers in Annapurna region, Nepal

Kangchenjunga: Guardian Spirit of the Great Snows, Nepal—November 4–December 4, 1991. From afar, Kangchenjunga (28,168 feet) resembles a frozen jewel gleaming in bright, cold light. Inaccessible to foreigners for many years, the remote massif offers some of the best trekking in the Himalaya. We'll approach it through rugged canyons knifed by turbulent rivers, dense rhododendron forests, steep ridges, and high yak pastures. Our leisurely paced, moderate trek gives us time to visit villages along the way. We supplement our trip with sightseeing in fabled Kathmandu. *Leader: Patrick Colgan. Price: $2,405 (12–15) / $2,640 (11 or fewer); Dep: $200.* **[92520]**

MARK A. LARSON

Sea of Cortez, Baja California, Mexico

OUTING RESERVATION FORM *Please read important policy information on reverse.*

MEMBERSHIP NUMBER	TRIP NUMBER	TRIP NAME	DEPARTURE DATE

YOUR NAME	HAVE YOU RECEIVED THE DETAILED TRIP BROCHURE? YES NO
STREET ADDRESS	YOUR HOME PHONE: ( )
CITY STATE ZIP	YOUR WORK PHONE: ( )

PLEASE PRINT YOUR NAME AND THE NAMES OF OTHER PEOPLE IN YOUR PARTY	MEMBERSHIP NUMBER	AGE	RELATIONSHIP	NUMBER OF OUTINGS YOU'VE BEEN ON: CHAPTER	NATIONAL	YEAR OF LAST NATIONAL OUTING
1.			SELF			
2.						
3.						
4.						

PER PERSON COST OF OUTING:	TOTAL COST OF THIS APPLICATION:	DEPOSIT ENCLOSED:	FOR OFFICE USE ONLY:

01

PLEASE MAKE CHECK PAYABLE TO SIERRA CLUB
MAIL TO: SIERRA CLUB OUTING DEPARTMENT, DEPT. #05618, SAN FRANCISCO, CA 94139

OUTING RESERVATION FORM *Please read important policy information on reverse.*

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01

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MAIL TO: SIERRA CLUB OUTING DEPARTMENT, DEPT. #05618, SAN FRANCISCO, CA 94139

Recycled Paper

and Switzerland—July 28–August 3, 1991. We'll spend three or four consecutive [illegible] *Dep: $200.* **[91798]**

[illegible] right whales and Magellan penguins at Pen-

Important Information on Sierra Club Outings

Mail To:
Sierra Club Outing Dept.
Dept. #05618
San Francisco, CA 94139

1. All reservations, including those confirmed pending leader approval, are subject to the reservation/cancellation policy of the Outing Committee.
2. A signed liability release is required for all foreign trip participants.
3. All participants age 12 and over must be Sierra Club members to attend an outing.
4. Your address may be released to other trip participants for purposes of ride-sharing or other trip-related purposes.
5. *Not all trips can accommodate special dietary needs or preferences. Contact the leader for this information before applying.*
6. Applications for trip space will be accepted in the order they are received at the following address:

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   Dept. #05618
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7. Please do not send Express Mail to this address. Doing so will delay your application.

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7. Please do not send Express Mail to this address. Doing so will delay your application.

• EUROPE •

Winter in Austria: Cross-Country Skiing—January 18–February 2, 1991. Our time is divided between Altenmarkt and Oberau, two small villages seldom visited by Americans. Cross-country tracks literally start at the doors of our cozy family inns; and, as we ski, delightful cafes along the way provide refreshment. Mid-trip we tour Salzburg. Trip price includes ski equipment, lessons, and extras like sledding and curling. For all levels of skiers. *Leader: Carol Dienger. Price: $2,245 (12–15) / $2,500 (11 or fewer); Dep: $200.* **[91791]**

Walking in the West Country: Dartmoor and Exmoor Parks, England—June 8–22, 1991. Ramble from tiny Exmoor's open moors through deep, wooded valleys to the coast. Follow swift streams down from the bare granite tors of wild Dartmoor. Add the sea views from Cornwall's cliff paths, and you have the best walking in southern England. We'll also visit historic castles, tiny old churches, and picture-book villages, and stay in comfortable hotels. Earn your cream teas with moderate walking in rugged country! Our roadhead is Plymouth. *Leader: Robin Brooks. Price: $2,470 (11–14) / $2,750 (10 or fewer); Dep: $200.* **[91822]**

Tuscany on Two Wheels, Italy—June 11–21, 1991. Discover the joy of riding a bicycle at a relaxing pace in pastoral Tuscany, the birthplace of the Italian Renaissance. We start our trip with a visit to Florence. Then, accompanied by an English-speaking guide and a sag wagon, we'll tour such historic towns as Siena, Volterra, and San Gimignano, visit the region that is famous for its prized Chianti Classico wine, and laze and swim in the warm Mediterranean. Relatively short moving days give us time to relax and enjoy the scenery. *Leader: Sy Gelman. Price: $2,075 (12–15) / $2,325 (11 or fewer); Dep: $200.* **[91823]**

Cycling the Hebrides and Highlands, Scotland—June 28–July 9, 1991. Satisfy your longing to see this ancient and beautiful land by cycling through a representative cross-section of Scotland's western islands and central highlands. We'll travel by ferry to the islands of Arran, Islay, and Skye, train-hop and bike across Highland country to Inverness and Loch Ness, and return to Glasgow, traversing lochs and rolling hills. Daily distances will average 45 miles over varied, at times challenging, terrain. Highlights include castles, deserted beaches, gardens, and waterfalls. *Leader: John Rogers. Price: $2,305 (12–15) / $2,560 (11 or fewer); Dep: $200.* **[91828]**

Hut-Hopping in Austria, Germany, and Switzerland—July 22–August 3, 1991. We'll spend three or four consecutive days hiking hut-to-hut, out of Scharnitz, Garmisch, and St. Moritz. Our itinerary encompasses some of the best trails, friendliest huts, and most spectacular alpine scenery that each country has to offer. In town, we'll stay in comfortable hotels. The hiking is moderate, averaging about four and a half hours per day; we'll be carrying only personal gear and a share of community lunch. One layover day is planned. *Leader: George Neffinger. Price: $2,460 (12–15) / $2,715 (11 or fewer); Dep: $200.* **[91847]**

• LATIN AMERICA •

Sea-Kayaking and Tropical Wildlife, Costa Rica—January 18–26, 1991. Costa Rica is unsurpassed in its variety of plants and wildlife. In our kayaks we'll blend with our surroundings as we explore otherwise inaccessible rivers, estuaries, and beaches for views of monkeys, birds, and turtles. By bus we'll visit the Monteverde Cloud Forest and other wildlife habitats. Paddling experience required. *Leader: Paul Barth. Price: $1,595 (10–12) / $1,715 (9 or fewer); Dep: $200.* **[91792]**

Guatemala: Land of Eternal Spring—February 3–17, 1991. Come join us for an exploration of the most fascinating country in Central America. See the charming colonial city of Antigua; beautiful, volcano-rimmed Lake Atitlan; the bustling Indian market at Chichicastenango; and the Cloud Forest Reserve of the resplendent quetzal. Traveling by van, we'll also visit remote highland villages where Mayan people still wear traditional, hand-woven clothing of exquisite design and color. *Leader: Wilbur Mills. Price: $1,585 (10–12) / $1,755 (9 or fewer); Dep: $200.* **[91793]**

Belize: Reef and Ruins, Central America—February 16–25, 1991. Using a ranch as our base, we'll explore Belize's lush interior and visit the magnificent ruins of Tikal in neighboring Guatemala. Moving to the Caribbean coast, we'll stay on a palm-studded island near a fascinating barrier reef. There we'll snorkel in crystal-clear water, learn about local conservation issues, and feast on fresh seafood! *Leader: Lola Nelson-Mills. Price: $1,540 (10–12) / $1,720 (9 or fewer); Dep: $200.* **[91796]**

Sea-Kayaking and Whale-Watching, Magdalena Bay, Baja California, Mexico—February 17–23, 1991. Spend an idyllic week exploring the waters of Magdalena Bay and the shorelines of the barrier island. Great birding, beachcombing, and whale-watching await us. Suited for the novice and expert paddler, this trip will give us a close-up look at the California gray whales in their winter home. Basic paddling instruction is provided. *Leader: Gary Dillon. Price: $1,095 (11–14) / $1,215 (10 or fewer); Dep: $200.* **[91798]**

River Rafting, Jungle, and Beach Adventure, Costa Rica—April 1–8, 1991. With its unmatched ecological diversity, Costa Rica is a natural-history paradise. For three days we'll raft the Pacuare, one of the most beautiful rivers in the tropics, enjoying waterfalls, rapids, and inviting pools. Then we fly to Manuel Antonio National Park, the home of more than 350 bird species, where we'll hike in the rainforests and swim in the nearby Pacific. *Leader: Blaine LeCheminant. Price: $1,690 (12–15) / $1,910 (11 or fewer); Dep: $200.* **[91808]**

Sea of Cortez Kayaking, Baja California, Mexico—April 15–21, 1991. Come paddle with us in the blue-green waters surrounding Espiritu Santo Island. We'll visit a sea lion rookery and explore sandy coves and inlets where the swimming, snorkeling, and fishing are great. Delicious meals, comfortable beach camping, and evenings spent under abundant stars complete this delightful expedition. Novice and experienced kayakers welcome. Airline schedules require arriving in La Paz a day before the trip and leaving a day after. *Leader: Maggie Seeger. Price: $1,115 (11–14) / $1,285 (10 or fewer); Dep: $200.* **[91811]**

Explore the Windward Islands of the East Caribbean—April 20–May 4, 1991. Where the Atlantic meets the Caribbean there's an arc of small islands formed by volcanic eruptions and the timeless lifecycles of coral. Barbados, Grenada, St. Lucia, and Dominica offer exciting glimpses of English tradition blended with African cultures and natural beauty. With naturalists and local historians, we'll explore and enjoy these exquisite Windward Islands. *Leader: Bob Posner. Price: $3,335 (11–14) / $3,615 (10 or fewer); Dep: $200.* **[91812]**

Brazil's Amazon Basin and Pantanal: Nature's Wonders—September 19–28, 1991. Our adventure begins in Manaus, heart of the Amazon River Basin. Here we'll explore the jungle waterways by canoe and hike on trails to observe the flora. We'll spend a night in Brasilia before continuing to the Pantanal, rich in wildlife and home to more than 600 species of birds. From our lodge, we'll travel through the area by boat, horseback, and on foot. A highlight is a visit to the nesting place of thousands of birds. Join us for a great South American adventure! *Leader: John Garcia. Price: $2,265 (12–15) / $2,520 (11 or fewer); Dep: $200.* **[91870]**

Discover the End of the Earth: Patagonia and Tierra del Fuego, Argentina—November 12–28, 1991. Patagonia, at the southern tip of South America, is a land of wind-swept pampas, jagged peaks, and deep glacial fjords. We'll view southern right whales and Magellan penguins at Pen-

insula Valdez, marvel at surging Moreno Glacier and the Fitzroy Massif in Glacier National Park, and enjoy outstanding birdwatching in Tierra del Fuego, where we'll explore the Beagle Channel by sea-kayak or canoe. Dayhikes are leisurely to moderate. Except for three nights of camping, accommodations will be in comfortable hotels. Small-boat experience required. *Leader: Carol Dienger. Price: $3,445 (12–15) / $3,700 (11 or fewer); Dep: $200.* **[92525]**

• MEDITERRANEAN •

Hiking and Island-Hopping in Greece—May 11–26, 1991. Zorba, here we come! From Athens, our exciting journey will take us as far south as Santorini in the Aegean Sea and as far north as Thessaloniki. In between we'll see a wealth of natural beauty, ancient ruins, and a spirited people with a fascinating culture. Travel will be by van, ferry, and on foot; we'll stay in hotels or pensions. *Leader: Carolyn Cattleman. Price: $2,630 (13–16) / $2,865 (12 or fewer); Dep: $200.* **[91815]**

Egypt and the High Sinai—October 12–26, 1991. Our two-week trip to Egypt includes visits to the great antiquities of the Nile Valley as well as a trek in the high-desert mountains of the Sinai. Highlights include tours of Luxor, Aswan, and the Pyramids; a felucca sail on the Nile; wandering through the Cairo bazaar; snorkeling in the Red Sea; and a tour of Santa Caterina Monastery beneath Mt. Sinai. Bedouin guides and camels will accompany our Sinai trek. *Leader: Ginger Harmon. Price: $2,465 (12–15) / $2,715 (11 or fewer); Dep: $200.* **[92510]**

• PACIFIC BASIN •

Hiking New Zealand—February 3–23, 1991. Magnificent scenery and a variety of outdoor activities await the visitor to New Zealand. Beginning in Auckland, we will explore the country's many attractions on our way to Christchurch, including steaming volcanoes, hot mudpools, a glowworm cave, a Maori village, snowcapped mountains, a Kiwi house, Milford Sound, and icy glaciers that extend down into subtropical rainforest. *Leader: Wayne Martin. Price: $2,690; Dep: $200.* **[91795]**

Bushwalking in Australia—March 3–24, 1991. Southeastern Australia's rugged mountain ranges are the focus of our three-week trip Down Under. Alternating backpacking with van travel, we'll explore central Tasmania, the Snowy Mountains of Victoria and New South Wales, and the Blue Mountains near Sydney, with a stop in Canberra to enjoy the Capital Territory's wildlife. (This trip can be combined with trip 91795, above.) *Leader: Vicky Hoover. Price: $2,410 (12–15) / $2,665 (11 or fewer); Dep: $200.* **[91800]**

• SOVIET UNION •

Feel the Winds of Soviet Change—May 12–28, 1991. Witness perestroika in action and Russian history in transition. In Byelorussia we'll stay with families on collective farms, and we'll visit a proposed national park near Minsk with Soviet environmentalists. Our tour includes a walk in the Carpathians, sightseeing in the ancient Ukrainian communities of L'vov and Uzhgorod, Leningrad's Hermitage, and Moscow's Kremlin. Evening theater performances cap the daily drama of Soviet life. *Leader: Bud Bollock. Price: $2,980 (12–15) / $3,235 (11 or fewer); Dep: $200.* **[91820]**

Bike and Hike in the Soviet Union—August 23–September 11, 1991. Our leisurely bicycle tour will explore the wonders of Siberia's phenomenal Lake Baikal, the largest and deepest freshwater lake in the world. Cycling an average of 40 miles a day, we'll have ample time for hiking and visiting historic and cultural points of interest. We will meet local inhabitants and enjoy their hospitality as well as their arts and crafts, folk dancing, and cuisine. Our itinerary also includes sightseeing in Moscow and Leningrad. *Leader: Frances Colgan. Price: $3,410 (12–15) / $3,660 (11 or fewer); Dep: $200.* **[91857]**

Backdoor to the Silk Road, Soviet Union and China—September 19–October 8, 1991. Explore the exotic, ancient, and rarely visited cultures of Dzhambul, Chimkent, and Turkestan on the northern Silk Road that passes through Soviet Kazakhstan. At Alma-Ata we'll enjoy hiking through Tien Shan's majestic alpine vistas before we continue across the Chinese frontier to Urumchi on the southern Silk Road route. Kashi's Sunday market, as in caravan days, is dominated by colorful traders from afar. Our gateway to this journey is Moscow, where sightseeing and theater complement our adventure. *Leader: Bud Bollock. Price: $3,725 (12–15) / $3,980 (11 or fewer); Dep: $200.* **[92500]**

SERVICE

Leader approval is required for all service trips.

Deer Creek Trail Maintenance, Mazatzal Wilderness, Tonto Forest, Arizona—March 10–17, 1991. Escape to springlike weather while helping to reconstruct a neglected trail in the rugged Mazatzal Mountains. From its source at about 7,000 feet, Deer Creek descends to 4,400 feet where it leaves the wilderness. As we hike down the Deer Creek Trail, we will encounter everything from pine forests to desert cacti. Our project includes clearing brush, removing fallen limbs, and rebuilding trail tread. *Leader: Vance Green. Price: $130; Dep: $50.* **[91072]**

Chillicut Trail Maintenance, Four Peaks Wilderness, Tonto Forest, Arizona—March 30–April 6, 1991. Our trail follows a riparian corridor to the summit of Buckhorn Mountain. Expect pristine conditions: the Four Peaks Wilderness has been closed to grazing since the 1940s and is currently a natural research area for the study of black bears. We will help maintain the Chillicut Trail by cutting tread, constructing waterbars, and removing brush. *Leader: Jim Vaaler. Price: $135; Dep: $50.* **[91073]**

Arizona Trail, Tonto Forest, Arizona—March 30–April 7, 1991. High in the Superstition Mountains east of Phoenix, we will work on a historic 1860 miners' route along the Mexico-to-Utah Trail. We'll backpack three miles to our base camp at 5,200 feet. On free days we'll hike to ancient cliff dwellings and a mysterious stone circle site. Expect warm spring days and cool nights. *Leader: Wil Passow. Price: $140; Dep: $50.* **[91074]**

Slickrock-Joyce Kilmer Trail Maintenance, North Carolina—April 13–20, 1991. Backpacking to Naked Ground high in the Nantahala and Cherokee forests, we'll camp and work on improving and developing trails. We'll have the opportunity to hike to Haoe Peak (at 5,249 feet, the highest in the Slickrock Wilderness) for sweeping views of the Appalachians. In Joyce Kilmer Memorial Forest, we will see the largest expanse of virgin forest in the East. Spring wildflowers should be plentiful. *Leaders: Vivian and Otto Spielbichler. Price: $185; Dep: $50.* **[91075]**

Buffalo River Trail Construction, Ozark Forest, Arkansas—April 14–20, 1991. We will extend a mainstem trail farther along America's first national river, in an area having panoramic, blufftop views of the river valley. Hiking distances are short, but worksites will often be on steep terrain. On our layover days we can swim, hike, fish, botanize, or take pictures while surrounded by the beauty of springtime in the Ozarks. *Leader: John Balsitis. Price: $160; Dep: $50.* **[91076]**

Red Rock Trail Maintenance, Coconino Forest, Arizona—April 21–27, 1991. Many colorful canyons cut deep into the southern edge of the Colorado Plateau. This extraordinary land is prized by photographers. We will work clearing brush and building tread on one of the area's many

trails. Free days can be spent exploring, birdwatching, or loafing. We'll be at elevations ranging from 4,500 to 6,500 feet. Days will be warm and nights cool. *Leader: Jim Ricker. Price: $120; Dep: $50.* **[91077]**

Abbey's Arches, Arches Park, Utah—April 21–27, 1991. Let spring beckon you to the mile-high plateau of southern Utah and wildernesses favored by Captain John Wesley Powell and Edward Abbey. Both veterans and beginners are welcome to help us maintain trails and assist with exotic plant removal. High spirits and good attitude are mandatory. Come and do good things in the badlands! *Leader: Susan Estes. Price: $195; Dep: $50.* **[91078]**

Grand Gulch, Southeast Utah Wildlands—May 4–12, 1991. Bureau of Land Management archaeologists and rangers will direct our trail- and site-preservation work in this remote sandstone canyon country of slickrock and Anasazi cliff-dwelling ruins. We'll backpack eight miles to our base camp at 6,000 feet. On free days we'll hike to natural bridges and arches. Days will be warm and nights nippy. *Leader: Wil Passow. Price: $240; Dep: $50.* **[91079]**

Sylvania Wilderness Trail and Campsite Maintenance, Ottawa Forest, Upper Peninsula, Michigan—May 19–26, 1991. Come to the North Woods and enjoy brilliant spring wildflowers and the yodel of loons. We'll repair campsites and portage trails in Sylvania's virgin forest. Our canoes will take us across deep, clear lakes that are home to bass, lake trout, walleye, and northern pike. Free days will provide time for more canoeing, swimming, fishing, and hiking. *Leader: Bill Sheppard. Price: $205; Dep: $50.* **[91080]**

Anasazi Archaeological Survey, Manti-La Sal Forest, Utah—May 27–June 7, 1991. Preserving, protecting, and enjoying have been the cornerstones of our outings program since the turn of the century. Working under the direction of archaeologists, we will map significant Anasazi sites. On free days we can explore the surrounding forest of the slickrock wonderland. *Leader: Bob Hartman. Price: $290; Dep: $50.* **[91081]**

Pecos Wilderness High Country Trail Building, New Mexico—June 1–8, 1991. A special outdoor experience awaits you building trail in the Land of Enchantment, north of Sante Fe. Among snowcapped peaks rising to more than 12,000 feet, we will have free time to enjoy the abundant wildlife and flowers, take photos of mountain sheep, or catch trout in a nearby stream for lunch. We have a three-mile hike to our base camp at 10,000 feet. *Leader: Julie Perry. Price: $160; Dep: $50.* **[91082]**

Near Alta Lakes, Colorado

TOM SLABACK

SKI

Leader approval is required for all ski trips.

Cross-Country Skiing, Copper Harbor, Michigan—February 3–10, 1991. Experience the beauty and tranquility of wilderness cross-country skiing at the tip of Keweenaw Peninsula on Lake Superior—where the average yearly snowfall is 250 inches! There are trails for all levels of skiers in this remote winter wonderland—trails through the woods and along the shoreline, plus Midwest mountain terrain to enjoy. Accommodations include modern cabins with rustic charm and a clubhouse with fireplace and sauna. *Leader: Donna Small. Price: $455; Dep: $50.* **[91369]**

North Rim Grand Canyon Cross-Country Ski Adventure, Arizona—February 24–March 2, 1991. The North Rim of the Grand Canyon is an "island in the sky" where there are vast and dense forests of pine, fir, and aspen. Covering approximately eight to ten miles daily, we will ski from Demotte Park through gently rolling meadows and forests to Bright Angel Point. We'll winter-camp for four nights along the rim, and spend two nights in a heated yurt with hot tubs. *Leader: Tom Stricker. Price: $495; Dep: $50.* **[91087]**

Backcountry Skiing, San Juan Mountains, Colorado—March 17–23, 1991. Experience the best in cross-country skiing in the high peaks of southern Colorado. We will ski one mile to our rustic lodge near timberline at 11,000 feet. The lodge has been converted from an old mining camp. The food will be outstanding and vegetarians will be accommodated. Instruction by a noted backcountry skier is available for all levels of skiers. Ski equipment may be rented, or you may bring your own. *Leaders: Bill Donahue and Dana Densmore. Price: $900; Dep: $100.* **[91088]**

Note: See foreign trips for another ski trip.

WATER

Leader approval is required for all water trips.

Everglades Park, Florida—February 17–22, 1991. We camp at Flamingo, a unique subtropical wilderness seriously threatened by pollution and neglect, at the southern tip of the park. On our daily canoe trips we will explore mangrove and buttonwood environments, freshwater ponds, brackish water, open coastal prairies, and saltwater marshes—homes for rare plants, birds, and animals. This leisure trip is for competent canoeists who enjoy birding, animal-watching, and photography. *Leaders: Vivian and Otto Spielbichler. Price: $220; Dep: $50.* **[91094]**

Canoeing Okefenokee Swamp, Georgia—March 10–15, 1991. From base camps on the east and west edges of the swamp, we will canoe different sections of the Okefenokee, exploring coastal prairies and cypress forests. Parts of the swamp were logged 100 years ago, but it has restored itself to its primitive beauty, providing habitat for birds, mammals, and reptiles (such as Pogo and friends!). This trip is for competent canoeists of all ages who enjoy birding, animal-watching, and photography. *Leaders: Otto and Vivian Spielbichler. Price: $290; Dep: $50.* **[91095]**

Reservation & Cancellation Policy

Eligibility: Our trips are open to Sierra Club members, applicants for membership, and members of organizations granting reciprocal privileges. You may include your membership application and fee with your reservation request.

Children must have their own memberships unless they are under 12 years of age.

Unless otherwise specified, a person under 18 years of age may join an outing only if accompanied by a parent or responsible adult or with the consent of the leader.

Applications: One reservation form should be filled out for each trip by each person; spouses and families (parents and children under 21) may use a single form. Mail your reservation together with the required deposit to the address below. No reservations will be accepted by telephone.

Reservations are confirmed on a first-come, first-served basis. However, when acceptance by the leader is required (based on applicant's experience, physical condition, etc.), the reservation is confirmed subject to the leader's approval, for which the member must apply promptly. When a trip is full, later applicants are put on a waitlist.

Give some thought to your real preferences. Some trips are moderate, some strenuous; a few are only for highly qualified participants. Be realistic about your physical condition and the degree of challenge you enjoy.

The Sierra Club reserves the right to conduct a lottery in order to determine priority for acceptance in the event that a trip is substantially oversubscribed shortly after publication.

Reservations are accepted subject to these general rules and to any specific conditions announced in the individual trip brochures.

Deposit: A deposit is required with every trip application. The amount of the deposit varies with the trip price, as follows:

Trip price per person	*Deposit per person*
Up to $499	*$50 per individual (with a maximum of $100 per family on family trips)*
$500 to $999	*$100 per individual*
$1,000 and above	*$200 per individual*

The deposit is applied to the trip price when the reservation is confirmed. All deposits and payments should be in U.S. dollars.

Payments: Generally, adults and children pay the same price; some exceptions for family outings are noted. You will be billed upon receipt of your application. Full payment of trip fee is due 90 days prior to trip departure. Trips listed in the "Foreign" section require additional payment of $300 per person six months before departure. Payments for trips requiring the leader's acceptance are also due at the above times, regardless of your status. If payment is not received on time, the reservation may be canceled and the deposit forfeited.

No payment (other than the required deposit) is necessary for those waitlisted. The applicant will be billed when placed on the trip.

The trip price does not include travel to and from the roadhead or specialized transportation on some trips (check trip brochure). Hawaii, Alaska, and Foreign trip prices are all exclusive of airfare.

Transportation: Travel to and from the roadhead is your responsibility. To conserve resources, trip members are urged to form carpools on a shared-expense basis or to use public transportation. On North American trips the leader will try to match riders and drivers. On some overseas trips you may be asked to make your travel arrangements through a particular agency.

Infrequently the Sierra Club finds it necessary to cancel trips. The Club's responsibility in such instances is limited in accordance with the Trip Cancellation Policy. Accordingly, the Sierra Club is not responsible for nonrefundable airline or other tickets or payments or any similar penalties that may be incurred as a result of any trip cancellation.

Confirmation: A reservation is held for a trip applicant, if there is space available, when the appropriate deposit has been received by the Outing Department. A written confirmation is sent to the applicant. Where leader approval is not required, the confirmation is unconditional. Where leader approval is required, the reservation is confirmed subject to the leader's approval. Where there is no space available when the application is received, the applicant is placed on the waitlist and the deposit is held pending an opening. When a leader-approval trip applicant is placed on the waitlist, the applicant should seek immediate leader approval so that in the event of a vacancy the reservation can be confirmed. When a person with a confirmed reservation cancels, the person at the head of the waitlist will automatically be confirmed on the trip, subject to leader approval on leader-approval trips. The applicant will not be contacted prior to this automatic reservation-confirmation except in the three days before trip departure.

Refunds: You must notify the Outing Department directly during working hours (weekdays 9–5; ph. 415-776-2211) of cancellation from either the trip or the waitlist. The amount of the refund is determined by the date that the notice of cancellation by a trip applicant is received at the Outing Department. The refund amount may be applied to an already-confirmed reservation on another trip.

A cancellation from a leader-approval trip is treated exactly as a cancellation from any other type of trip, whether the leader has notified the applicant of approval or not.

The Outing Committee regrets that it cannot make exceptions to the Cancellation Policy for any reason, including personal emergencies. Cancellations

FOREIGN TRIP TIER-PRICING

Most Foreign Outings are tier-priced. This means a trip's price is dependent on the number of participants. Two prices are listed for a trip, showing the signup levels associated with each.

Final billing is based on the signup level at 90 days prior to the trip departure date. If the signup level goes up sufficiently between the billing and departure dates, the lower tier price will apply, and refunds will be issued after the trip is over.

Cancellations from trips where the tier price has changed are subject to our reservation and cancellation policy. All regular cancellation fees will apply.

for medical and other reasons are often covered by traveler's insurance, and trip applicants will receive a brochure describing this type of coverage. You can also obtain information regarding other plans from your local travel or insurance agent. We encourage you to acquire such insurance.

Trip leaders have no authority to grant or promise refunds.

Transfers: For transfers from a confirmed reservation made 14 or more days prior to the trip departure date, a transfer fee of $50 is charged per application.

Transfers made 1–13 days prior to the trip departure date will be treated as a cancellation, and the Cancellation Policy will apply. No transfer fee is charged if you transfer from a waitlist.

A complete transfer of funds from one confirmed reservation to another, already-held, confirmed reservation will be treated as a cancellation, and will be subject to cancellation fees.

Medical precautions: On a few trips, a physician's statement of your physical fitness may be needed, and special inoculations may be required for foreign travel. Check with a physician regarding immunization against tetanus.

Emergency care: In case of accident, illness, or a missing trip member, the Sierra Club, through its leaders, will attempt to provide aid and arrange search and evacuation assistance when the leader determines it is necessary or desirable. Costs of specialized means of evacuation or search (helicopter, etc.) and of medical care beyond first aid are the financial responsibility of the ill or injured person. Since such costs are often great, medical and evacuation insurance is advised, as the Club does not provide this coverage for domestic trips. Participants on foreign outings are covered by limited medical, accident, and repatriation insurance. Professional medical assistance is not ordinarily available on such trips. Be sure your insurance covers you in the countries involved.

The leader is in charge: At the leader's discretion, a member may be asked to leave the trip if the leader feels the person's further participation may be detrimental to the trip or to the individual.

Please don't bring these: Radios, sound equipment, firearms, and pets are not allowed on trips.

Time or event of cancellation	Amount forfeited per person	Amount refunded per person
1) Disapproval by leader (once leader-approval information has been received) on leader-approval trips	None	All amounts paid toward trip price
2) Cancellation from waitlist, or the person has not been confirmed three days prior to trip departure	None	All amounts paid toward trip price
3) Trip canceled by Sierra Club	None	All amounts paid toward trip price
4) Cancellation from confirmed position or confirmed position subject to leader approval		
a) 90 days or more prior to trip departure date	$100 or amount of deposit, whichever is less	All amounts paid toward trip price exceeding forfeited amount
b) 60–89 days prior to trip departure date	Amount of deposit	As above
c) 14–59 days prior to trip departure date	20% of trip fee, but not less than the amount of deposit	As above
d) 4–13 days prior to trip departure date if replacement can be obtained from waitlist	30% of trip fee, plus $50 processing fee, but in no event more than 50% of total trip fee	As above
e) 4–13 days prior to trip departure date if replacement *cannot* be obtained from waitlist (or if there is no waitlist at the time of cancellation processing)	40% of trip fee, plus $50 processing fee, but in no event more than 50% of total trip fee	As above
f) 0–3 days prior to trip departure date	Trip fee	No refund
g) "No-show" at the roadhead, or if participant leaves during trip	Trip fee	No refund

Mail checks and applications (excluding those sent by express mail) to:
Sierra Club Outing Department
Dept. #05618, San Francisco, CA 94139

Mail all other correspondence (including express-mail applications) to:
Sierra Club Outing Department
730 Polk St., San Francisco, CA 94109

For More Details on Outings

Outings are described more fully in trip brochures, 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 trips are best suited to their abilities and interests. Don't sign up for the wrong one! Ask for the trip brochure before you make your reservations to save yourself the cost and inconvenience of changing or canceling a reservation. The first three brochures are free. Please enclose 50 cents apiece for extras. Write or phone the trip leader if any further questions remain.

Send brochures (order by trip number):

#_____ #_____ #_____

NAME_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

Please allow 2–4 weeks for delivery. **Do not mail cash.**

#5

Clip coupon and mail to: **Sierra Club Outing Department,** 730 Polk St., San Francisco, CA 94109

I Want to Take It, That's Why

Your survival in the wild won't depend on this stuff, but your mood just might.

Reed McManus

WITH APOLOGIES to Colin Fletcher, author of *The Complete Walker* and a man known to remove the labels from tea bags to save weight, this column is about backwoods luxuries—creature comforts far from home.

We trust you've got food, a good pack, sturdy boots, a warm sleeping bag, and, somewhere among your gear, a first-aid kit, emergency Space blanket, and compass. But as you look at your pack, you realize there are a few corners begging to be filled.

An incomprehensible variety of gadgets and geegaws clamor to fill this void. Your job is to rein in your childhood instinct to collect 'em all, because the greatest backpacking luxury is traveling light.

But what is excess to one camper may be simple pleasure to another. (A friend once lugged a three-foot-tall Big Bird into the backcountry, because that's what kept her kids happy. Another never fails to pack a whiskey flask, because that's what keeps *him* happy.) Think of the key camping activities: sitting, lying down, eating and drinking, staying clean, looking at stuff, and playing.

In my lifetime I've spent hours circling Sierra lakes with book in hand, looking for the perfect rock to prop myself up against. Devoted sitters might pack along a Crazy Creek Chair or a Nada Chair back sling. In camp these will support your back in style; but on the trail they'll add at least a pound to your load.

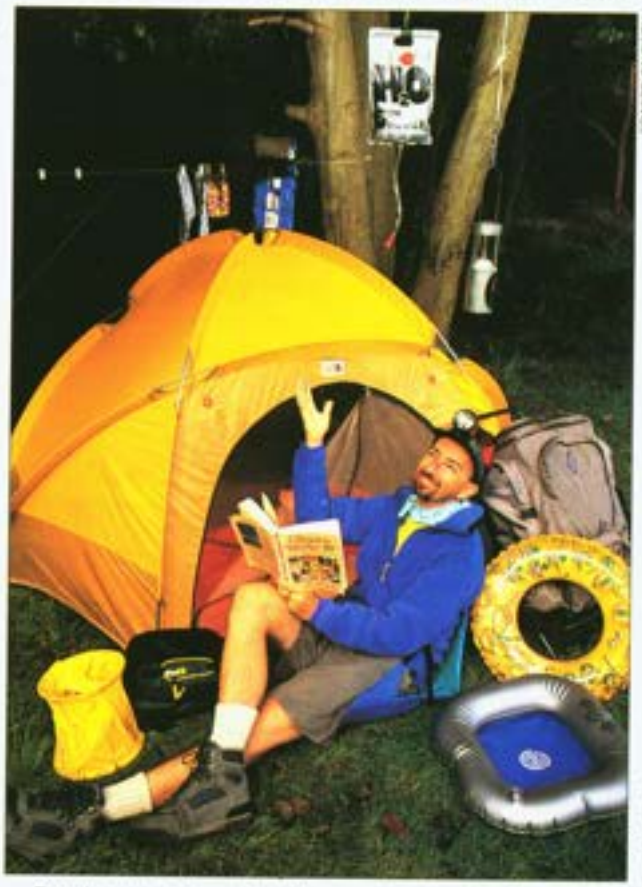
Some campers consider books as essential as good food. Most backwoods bookworms carry candle lanterns, which extend reading hours forever, or at least until you're out of candles. A small headlamp is a good alternative: It leaves your hands free for page-turning, and its beam can be adjusted to any angle.

Reading often precedes a nap. Gone are the days when campers claimed they got a good rest atop a bone-flattening slab of Ensolite. Now most choose among Cascade Designs' Therm-a-Rest (a combination foam pad and air mattress), its RidgeRest pads (closed-cell pads whose ridges provide a soft surface and dead-air spaces for thermal efficiency), and Basic Designs' Equalizer, a "self-contouring" foam pad and air mattress. Not enough comfort? Add a non-slip mat that keeps you from sliding off your pad. Or pack a lightweight hammock—don't sleep on your stomach, though, or your spine will be reshaped in the form of a banana.

The first thing most people want when they wake up is something to eat. Many backpacker kitchens consist of a spoon, a Sierra Cup, a homemade billy can for boiling water, and an aging Svea stove. But even minimalists can admire "thermo-mugs" that insulate liquids and protect lips from hot surfaces. There are collapsible grills for cooking up the day's catch, and the BakePacker, a clever device that enables you to bake atop a campstove.

As for food itself, in the backcountry anything fresh is a luxury, and so, often, is anything tasty. Spices and condiments such as Tabasco and soy sauce help bring *haute cuisine* to the high country. I always carry my Melitta coffee filter (and a ration of premium ground beans), so I can have a fresh cup every morning. (Recently, though, I've been tempted by "coffee bags," direct descendants of tea bags.)

Cleanliness may be next to godliness, but it's nowhere near a campsite. Consider toting an inflatable sink, spigoted water bag, collapsible water bucket, or solar shower. Outdoor Research offers hanging toiletry organizers, and mail-order house Campmor (gadgets galore!) will sell you a nifty, if nerdy,



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broom and dustpan for your tent.

For wandering beyond the confines of your campsite, think about bringing a waist pack instead of a daypack. Among fanny packs, those with built-in water bottles keep fluids close at hand; larger models such as Lowe's Mesa Runner and REI's Half-Ton Fanny Pack compress loads to keep them from bouncing. Mountainsmith sells "lumbar packs" that pull the load toward the small of your back.

When the weather turns cold and wet, you can reach for one of the new, high-tech hats that promise to help you keep your chin up in a downpour. Outdoor Research and Columbia Sportswear offer headgear incorporating every possible combination of waterproof, breathable fabric (for rain protection), insulating materials (for warmth), and synthetic lining (for wicking moisture). The most popular types are Elmer Fudd–style billed caps with earflaps, and full-brimmed "crusher" models. Helmet-style synthetic caps with chin straps are great for sleeping, because they stay put and don't itch.

No discussion of outdoor luxuries is complete without a look at accessories for exploring and playing. Many campers carry binoculars, but they often fail to notice what's in front of their noses—something a hand lens will remedy. If you're going near warm-water lakes, consider taking a mask and snorkel. To identify constellations, carry a star map. For more frivolity, reach for a kaleidoscope, a kite, baseball gloves and ball, a Frisbee, a harmonica . . .

The list goes on: A nicely carved walking staff. An altimeter. Those clever hand warmers that provide heat miles from an electrical socket. A solar-powered, self-illuminating, portable toilet-paper holder. (I'm not making this up.) If you're not careful, what you'll need next is a Sherpa. So, after you've weighed the merits of these non-essentials in your head, make sure you weigh them on a scale. ■

REED MCMANUS *is* Sierra*'s associate editor.*

IF A TREE FALLS IN THE SIERRA WILL ANYBODY HEAR IT?

Hopefully, everyone who cares for the environment has been listening. Because reports of road salt damage to vegetation are very clear. But now, there is an answer to this problem.

In the Sierra, as elsewhere in winter, salted highways are gradually becoming pathways through a dying landscape. Road salt eventually leaches into the roots of nearby trees. Lofty pines fall victim to our highways' chemical dependence.

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We owe it to the environment to listen.

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BOOKS

The New Deal's Interior Man

Righteous Pilgrim: The Life and Times of Harold L. Ickes, 1874–1952
by T. H. Watkins
Henry Holt
$35, cloth

Larry Anderson

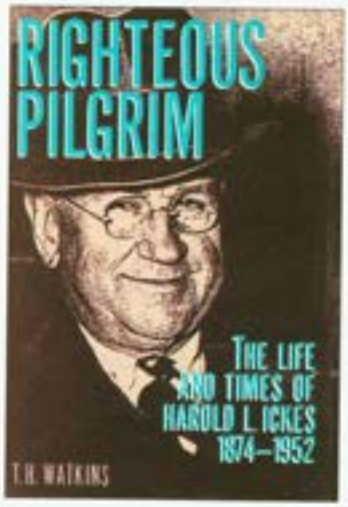
HE HAD "the soul of a meat ax and the mind of a commissar," an exasperated congressman once said of Harold LeClair Ickes, Secretary of the Interior from 1933 until 1946. His boss, Franklin D. Roosevelt, sometimes referred to him in private as "Donald Duck," a sobriquet that suggested Ickes' loud, cranky, irrepressible approach to public life. Supporters and critics alike, with an eye to his self-righteous moralizing about political ethics and the public purse strings, gave him the moniker "Honest Harold."

A self-styled curmudgeon, Harold Ickes was one of the most colorful, controversial, and influential public figures of his era. In this sweeping biography, T. H. Watkins provides a sympathetic but candid portrait of the driven, complex man whose formidable legacy is still apparent, in ways both dramatic and subtle, across the political and physical landscape of the United States.

Fifty-nine years old when FDR appointed him chief custodian of the nation's federal lands and natural resources, Ickes had already pursued a distinguished if erratic public career. He was an active Progressive during the pre–World War I heyday of reform, and his early accomplishments were a mere prelude to his political reincarnation as the consummate New Dealer.

Ickes came of age in turn-of-the-century Chicago, where such legendary figures as George Pullman, Eugene V. Debs, and Jane Addams personified the social and economic forces of that tumultuous era. The intense, solemn 16-year-old had escaped from a grim boyhood in Altoona, Pennsylvania, when his mother died and his reprobate father proved unable to support young "Clair" and his five siblings. Ickes struggled through the University of Chicago before embarking on an exuberant vocational journey as journalist, lawyer, municipal reformer, anti-monopoly crusader, and civil-rights champion.

His tempestuous marriage in 1911 to the well-off Anna Wilmarth provided him the financial freedom to indulge



his passion for public life—but at a stiff personal price. ("We quarreled about everything," Ickes recalled after her death in a 1935 auto accident.) Ickes threw his first reform efforts behind the usually futile campaigns of independent Republicans intent on cleaning up Chicago politics. Soon his ambition and talents carried him into national affairs. A "wobbly Republican from the first," Ickes was a mainstay of the short-lived Progressive Party and Theodore Roosevelt's exciting, if divisive, 1912 Bull Moose presidential campaign.

Like so many other veteran liberal reformers, Ickes drifted through political doldrums during the Republican "normalcy" of the 1920s. But the apostate Republican campaigned vigor-

ously for FDR in 1932, and his moribund public career was resurrected after Roosevelt's election.

The heart of Watkins' exhaustive story is Ickes' 13-year tenure as Secretary of the Interior—the longest anyone has held that post. When Ickes took command in 1933, the Department of the Interior was a sprawling, troubled bureaucracy. Since its creation in 1849, the department had encompassed a motley variety of bureaus with sometimes conflicting mandates. The General Land Office, the National Park Service, the U.S. Geological Survey, the Bureau of Mines, the Bureau of Reclamation, the Bureau of Indian Affairs, and U.S. territorial possessions such as Puerto Rico, Hawaii, Alaska, and the Virgin Islands were the principal components of Ickes' new dominion.

With so much booty at its disposal, the agency had long been a source of abuse and corruption. Controversies originating in the Interior Department—involving the General Land Office, the Ballinger-Pinchot affair, and the Teapot Dome scandal—made headlines at depressingly regular intervals. "A 'take charge' man if one ever lived in the earth," Watkins writes, Ickes was determined to restore the agency's tarnished reputation.

He was soon handed the additional task of running the new Public Works Administration (PWA). With billions of federal dollars at his fingertips, Ickes oversaw many of the New Deal projects that provided jobs and transformed the American landscape during the Depression-ravaged 1930s. Indeed, many of the larger PWA projects became geographical landmarks and cultural icons, from New York's Triborough Bridge and Lincoln Tunnel to the massive dams that substantially altered the river basins of the Tennessee, the Colorado, the Columbia, and California's Central Valley. In his obsessive determination to avoid waste and chicanery, however, Ickes released PWA funds at a deliberate pace that tested the patience of those citizens and politicians—most notably Roosevelt himself—eager to see quick results. He

Entering the Grove
Photography by Gary Braasch
Text by Kim Stafford
Gibbs Smith
$34.95, cloth

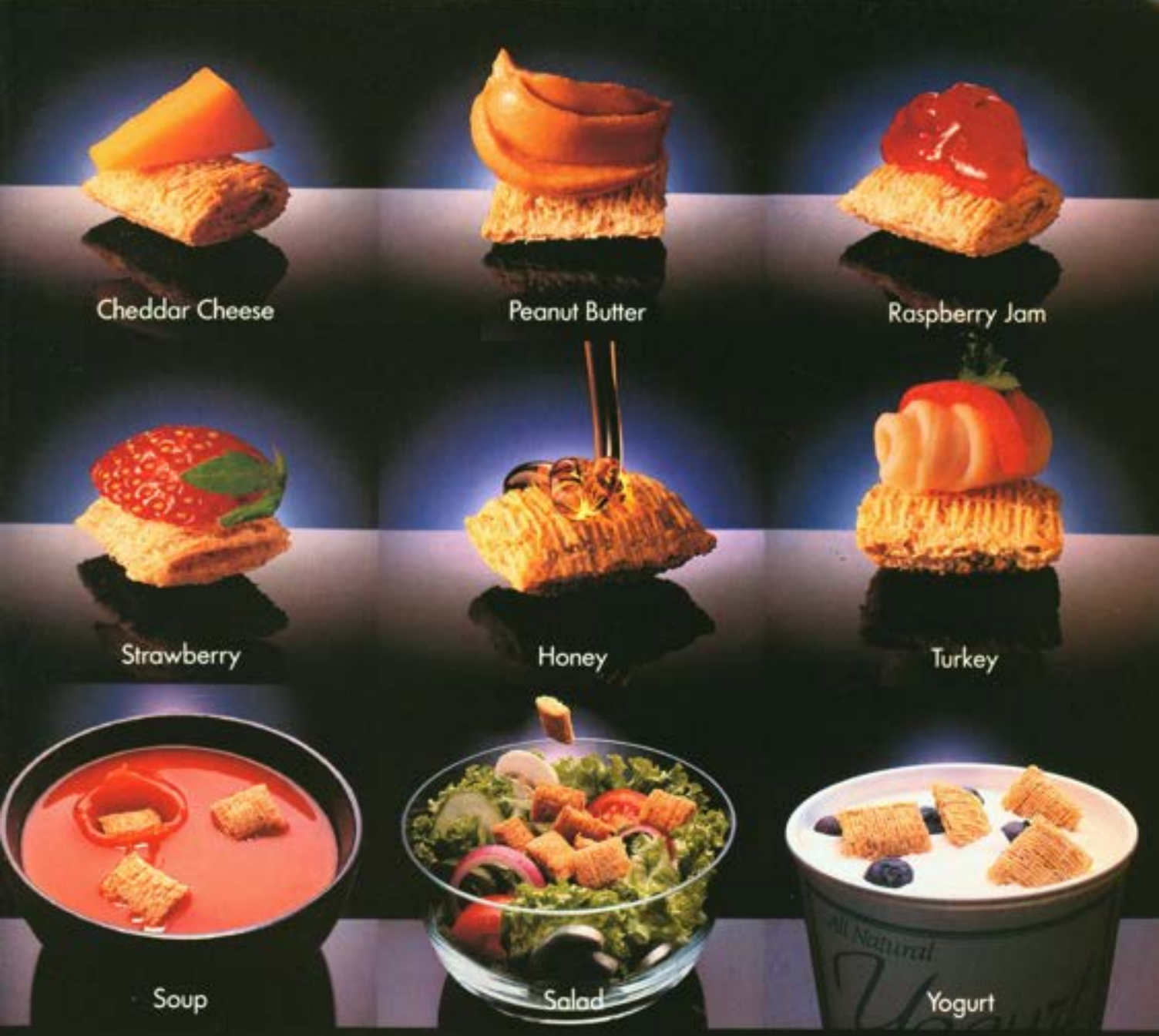
"Everywhere I look trees plunge into earth, climb the sky, sip fog from the wind and swallow iron from the earth." So writes Kim Stafford in this testimonial to trees, in which he and photographer Gary Braasch record all manner of sylvan secrets. Braasch's image of mist over Costa Rica's Braulio Carrillo National Park (above) is a sample of the result.

was gradually supplanted in the role of public-works czar by his rival, Harry Hopkins, chief of the Works Progress Administration, who didn't fear accusations of reckless spending.

Ickes' other principal adversary within the government was Secretary of Agriculture Henry Wallace. The simmering dispute between the two mercurial Cabinet members revolved around Ickes' vision of a vast new "Department of Conservation"—which he, of course, would head. And the focus of Ickes' imperial ambitions was the U.S. Forest Service, under Wallace's jurisdiction. Ickes' persistent and fruitless campaign to gain control of the national forests, Watkins observes, was "one of the longest, noisiest, and most controversial squabbles in the annals of American bureaucracy." The battle also pitted him against his longtime friend and Progressive ally, Gifford Pinchot, the patriarch of the Forest Service and of the "utilitarian" conservation crusade.

Even without the Forest Service, Ickes dominated the public domain like a colossus; he straddled as well the utilitarian and preservationist schools of conservation philosophy. His paradoxical imprint can be seen in the federal government's often contradictory role as both developer and protector of the American environment. On one hand, the PWA mega-projects approved by Ickes drastically transformed whole regions—sometimes with detrimental ecological results. On the other, Ickes became an increasingly staunch advocate of preservationist values, gradually shifting the traditional pro-development thrust of the government's natural-resource policies.

During Ickes' tenure, for instance, the national-park system more than doubled in size. His finest hours as a conservationist, by Watkins' account, came during battles to establish Olympic and Kings Canyon national parks. Carved out of national-forest lands, Olympic and Kings Canyon were conceived as true wilderness parks,



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unsullied by the scale of road-building, concessions, and other development that marked the Mather-Albright Park Service era. In 1939 Ickes initiated a bill to designate wilderness areas in national parks. Though the legislation failed, it was the first precursor of the 1964 Wilderness Act to be introduced in Congress.

Of course, Ickes' duties reached beyond natural-resource issues. Watkins recounts in sometimes daunting detail the Interior secretary's intense involvement in official matters ranging from the administration of U.S. territories to the management of fuel supplies during World War II.

Ickes' public influence owed much to his talents as a spokesman for the New Deal. He was the most slashing and indefatigable of Roosevelt's campaigners at election time—a political "buzzsaw," said the appreciative president. He issued early and strident warnings about the threat posed by fascists in Italy and Germany; spoke up for the rights of blacks and Native Americans; and criticized the wartime policy of detaining Japanese-Americans in concentration camps (though he carried out the distasteful task of resettling the unjustly imprisoned citizens). Ickes' political behavior was not always above reproach, however. Worried about his reputation, the sometimes paranoid bureaucrat allowed wiretaps of certain Interior employees, and authorized illegal searches of private homes.

Ickes, who prolifically documented his own public life in *The Autobiography of a Curmudgeon* (1943) and a three-volume work, *The Secret Diary of Harold L. Ickes* (1953–1954), presents an intimidating and disarming challenge to a biographer. But Watkins, editor of *Wilderness* magazine and the author of books about the history and environment of the American West, doesn't gloss over his subject's personal and political shortcomings. He deals frankly and sensitively with the relationship between Ickes' compulsive, sometimes frenzied public behavior and his troubled personal life. Ickes' extramarital sexual escapades culminated in a torrid relationship with an unidentified "X" during his first years in Washington, which jeopardized his political life. His furious work pace kept him near the brink of collapse: He suffered a heart attack in 1937, and dealt with chronic insomnia by ingesting increasing quantities of whiskey and sleeping medications. The 64-year-old Ickes at last found domestic happiness when he married his second wife, Jane, almost 40 years his junior.

Ickes resigned from the Cabinet in 1946, loudly protesting President Truman's nomination of California oilman Edwin Pauley as Secretary of the Navy. Ickes' stormy resignation on a matter of principle contrasts sharply with the departure of a later, equally outspoken Interior secretary, James Watt. The furor that caused Ronald Reagan's appointee and Ickes' ideological opposite to leave office was as much over Watt's tasteless public rhetoric as over his controversial policies.

The political and ideological debate over the destiny of the American environment remains just as highly charged now as it was in the days of Harold Ickes. Watkins' compelling chronicle of Ickes' remarkable career will not settle that debate, but it does provide a valuable benchmark by which to gauge today's public policies and personalities.

LARRY ANDERSON *is a freelance writer in Little Compton, Rhode Island.*

BRIEFLY NOTED

While seemingly aimed at younger readers, ***Crow and Weasel*** (North Point Press; $16.95, cloth) is by no means for them alone. The novella-length fable, penned by Barry Lopez and illustrated by Tom Pohrt, follows two young men who venture on horseback farther north than any of their people have ever gone before. In describing the youths' encounters with the northland's strange but fascinating denizens (including an array of anthropomorphized animals), Lopez weaves a moral lesson: Humanity must relate spiritually to the land, and respect native traditions. . . . "Grizzlies

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are wilderness incarnate," writes Doug Peacock in ***Grizzly Years*** (Henry Holt; $22.95, cloth). For nearly two decades after he returned from fighting in Vietnam, Peacock tried to heal the emotional wounds of combat by roaming the American West alone and unarmed, studying the ways of grizzlies. He has devoted himself to protecting the animals, and this book serves not only as a recounting of his odyssey, but as a natural history of the bears. . . . In ***The Anasazi*** (Rizzoli; $75, cloth), art historian J. J. Brody, a specialist in American Indian art of the Southwest, examines the pottery, weaving, cliff-dwellings, and petroglyphs of a culture that flourished some 2,000 years ago in parts of what are now New Mexico, Arizona, Utah, and Colorado. His text provides a thorough examination of Anasazi culture, while a multitude of photographs of Anasazi art and Southwestern landscapes make the book a visual feast. . . . An ardent lover of the Sonoran Desert, William K. Hartmann spent some 30 years studying its natural history. Especially fascinating to him were the dark lava flows and cinder cones of Mexico's Pincate Mountains—the "black heart" of the desert. That metaphor gave Hartmann the title for his book, ***Desert Heart: Chronicles of the Sonoran Desert*** (Fisher Books; $35, cloth), in which he records his wanderings in the region. . . . Elzéard Bouffier, the protagonist in Jean Giono's ***The Man Who Planted Trees,*** lamented that his French countryside was dying for want of trees. Alone with his dog and his sheep, he commenced his life's work—the planting of 100 acorns every day. Over 30 years, he transformed the landscape from a dessicated wasteland into a forested vale. Now, in an effort to foster tree-planting in America, Chelsea Green Publishing and Earth Music Productions have issued a book/audiocassette version of Giono's beloved tale ($19.95 from Chelsea Green). The clothbound book includes wood engravings by Michael McCurdy; the 40-minute tape is narrated by Robert J. Lurtsema and features music

"Gareth celebrates Christmas with one of his pride."

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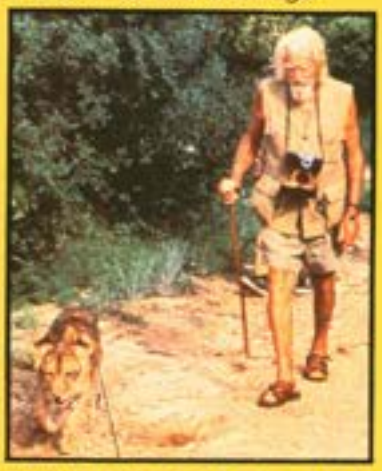

George Adamson shortly before his tragic death.

TULI LION PROJECT, BOTSWANA

Part of the proceeds from the sale of this book are directed to conserving the lion in the Northern Tuli Game Reserve through a special trust dedicated to the memory of George Adamson.

It sets the background for the great adventure Gareth Patterson is undertaking at the moment — spending 12 hours a day in the company of three lions as they hunt and explore the bush world that is their haven.

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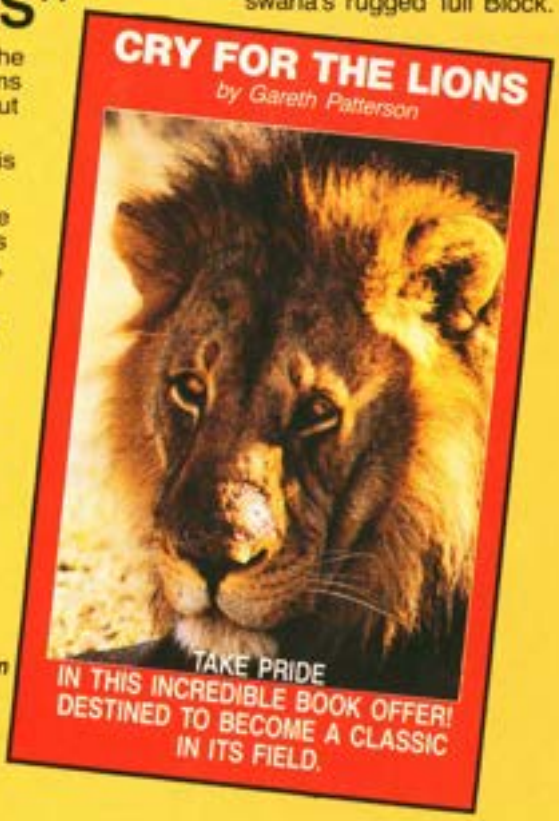

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by the Paul Winter Consort. Five percent of all sales will go to Global ReLeaf, a program of the American Forestry Association. . . . To instruct people on how to grow more trees, TreePeople, a group founded in Los Angeles 20 years ago by then-teenaged Andy Lipkis, has produced ***The Simple Act of Planting a Tree*** (Jeremy P. Tarcher, Inc.; $12.95, paper). . . . Not without a pardonable bit of hubris, the California Department of Parks and Recreation (CDPR) calls its domain "the finest state-park system in the nation." As if to prove its point, the agency has produced ***A Visitor's Guide to California State Parks*** ($14.95 plus $2.05 postage and handling, paper; CDPR, Publications Section, Room 118, P.O. Box 942896, Sacramento, CA 94296). In addition to an informative text and several useful maps, this handsomely designed book features photography by such notables as Willard Clay, Carr Clifton, and Larry Ulrich.—***Mark Mardon***

REMEMBER . . .

Continued from page 87

"I know that," he said, "but there was nothing I could do to stop it, was there? And I had work to do."

She was stunned into flaming silence.

He never did understand why she was so angry. As far as he was concerned, you worried about what you could change, and you accepted everything else. If a house burned, it was, after all, only a house.

•

Thoreau went to Walden Pond, he said, to conduct an experiment. "I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived." He was quite explicit about the nature of his experiment. It was not, he said, a model for the ideal life, not an experiment he

meant anybody else to copy. "I would not have anyone adopt *my* mode of living on any account; for, beside that before he has fairly learned it I may have found out another for myself, I desire that there may be as many different persons in the world as possible; but I would have each one be very careful to find out and pursue *his own* way, and not his father's or his mother's or his neighbor's instead." And what his experiment taught him did not, in fact, have anything to do with living "cheaply or meanly." The lesson was in values, not in prices. "I learned this, at least, by my experiment: that if one advances confidently in the direction of his dreams, and endeavors to live the life which he has imagined, he will meet with a success unexpected in common hours. He will put some things behind, will pass an invisible boundary; new, universal, and more liberal laws will begin to establish themselves around and within him; or the old laws be expanded, and interpreted in his favor in a more liberal sense, and he will live with the license of a higher order of beings. In proportion as he simplifies his life, the laws of the universe will appear less complex, and solitude will not be solitude, nor poverty poverty, nor weakness weakness. . . . Superfluous wealth can buy superfluities only. Money is not required to buy one necessary of the soul."

Thoreau's experiment has raised a nervous defensiveness in a long line of critics, beginning with Thoreau's own best friend, Emerson, who admired him and helped to establish his reputation, but who also dismissed him at his funeral, in a memorable phrase, as "the captain of a huckleberry party."

We have a public conception of moral responsibility. Despite the long thread of individualism running through our culture, we tend to believe that whatever is good is good in the collective sense. We may admire Thoreau and his descendants, Gandhi and Martin Luther King, Jr., for the high-mindedness of their sentiments, but we are at the same time suspicious of a philosophy that seems so personal, so

intensely directed at the individual life. To seek by public means to change the evil in our lives—that we can honor and respect. But simply to refuse, as one human being, acting alone, to participate in evil—that seems to us somehow dangerous, selfish, too piddling to make much practical difference. How could Thoreau, we want to know, busy himself, in good conscience, as the "self-appointed inspector of snowstorms" when the much greater turbulence of slavery was raging all around? It is true that he championed John Brown, spoke passionately in Concord and elsewhere in favor of abolition, and perhaps assisted a traveler or two on the Underground Railroad to freedom in Canada, but it is also true that Thoreau was no reformer. His heart wasn't in it. He would sooner have gone walking in the woods. How dare such a man pretend to any moral superiority?

There are two classes of moralists: those who seek to improve the quality of other people's lives, and those who are content to improve their own lives. There are professors of morality, and there are practitioners of it; the categories tend to be exclusive. Nothing is so terrifying as a demonstration of principle. Emerson preached Nature; Thoreau embraced nature; it is Thoreau, of course, who ultimately strikes us as dangerous. It is one thing to decry the rat race, to utter ringing declarations against it, to write clever stories exposing its follies—that is the good and honorable work of moralists. It is quite another thing to quit the rat race, to drop out, to refuse to run any further—that is the work of the individualist. It is offensive because it is impolite; it makes the rebuke personal; the individualist calls not his or her behavior into question, but mine. The moralist believes in the necessity of enemies, the individualist in their irrelevance.

It was so with my father. He went to the same church as his neighbors, confessed the same creed, partook of the same absolution. He heard the same preaching: "Take no thought for the morrow," and "Lay not up treasures on earth, where moth and rust doth

corrupt," and "It is harder for a rich man to enter into heaven than for a camel to pass through the eye of a needle." But he made people nervous because he not only professed these beliefs, he practiced them. When he heard that his house was burning, he went on with the plowing. People said of him what is always said of such people: How selfish, how impractical, what a shame for his family! Think what he might have done if he had ever tried to make something of himself!

•

One spring night my father went to bed, fell asleep, and never awoke. He died as quietly, as uncomplainingly, as he had lived. It was an awkward moment for a farmer to die, too late in the season to secure someone else to run the land. He had thought of that.

In the papers he left behind was a set of instructions for Mother: diagrams of the farm, notes on what to plant where and when, instructions on the management and harvesting of the crops, on the proper care of the machinery, on the arcane details of the year's farm program—everything Mother needed to know to operate the farm herself that summer, as she did, triumphantly.

Among the instructions he left behind was a plan for the flower beds in the yard, complete with planting charts, species names, and notes about when each variety would bloom and what color it would be. Even in death the flowers mattered to him. They were a reminder, which I have sometimes betrayed but never forgotten, of all that is genuinely important in life. ■

PAUL GRUCHOW *is the author of* A Prairie Year *and* The Necessity of Empty Places. *This essay, which first appeared in* The Journal of Gastronomy, *is featured in* Our Sustainable Table, *an anthology of essays about agriculture that includes contributions from Frances Moore Lappé, Wendell Berry, Alice Waters, Wes Jackson, and Gretel Ehrlich. It will be published in November by North Point Press.*

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We like to have a Christmas tree, but I don't like the idea of cutting them down. What's the most environmentally conscious way of celebrating the holidays? (Lisa Meyers, Canton, Ohio)

There are alternatives to the traditional cut tree. Fireproof plastic replicas are popular; though it's nonbiodegradable and made from a non-renewable resource, one plastic tree will keep many real ones from being chopped down.

The smell of plastic is no replacement for the scent of evergreen, however, so you may want to invest in a live tree from a nursery. Living trees can survive for about ten days indoors; after the holidays, plant yours in the yard, or put it outside in a large pot.

Dreams of a green Christmas don't have to stop with the tree. You can buy recycled-paper gift wrap and greeting cards from such companies as Earth Care Paper, Inc. (P.O. Box 3335, Madison, WI 53704) and Co-Op America (10 Farrell St., South Burlington, VT 05403), and energy-efficient Christmas-tree lights from Real Goods Trading Company (966 Mazzoni St., Ukiah, CA 95482). *The First Green Christmas* (Halo Books, 1990) covers the subject of trees and decorations in detail.

How can I dispose of my old refrigerator without releasing ozone-destroying Freon into the atmosphere? (Ezra Rawdin, Scottsdale, Arizona)

More and more attention is being paid to the problems associated with refrigerant chlorofluorocarbons (CFCs); a number of states and municipalities have in place or are considering legislation that requires air-conditioner and refrigerator coolants to be recycled.

Most discarded refrigerators end up in a municipal dump or are hauled to a scrap-metal dealer, where the Freon ordinarily is vented into the atmosphere in the course of dismantling the fridge. Some refrigerator manufacturers say they are testing equipment to recover used Freon. Whirlpool offers the "Ozone Saver," a plastic bag that traps the coolant as it is vented; the used gas is then taken to a service center for cleaning and reuse. Whirlpool service people will, for a fee, recover the Freon from your refrigerator before you get rid of it.

You might consider keeping your old fridge as a spare—or taking the door off and putting it in storage for a while. CFC-recovery consciousness is spreading rapidly, and it may be easier to find someone to decant your old Freon in an environmentally safe manner in a few years.

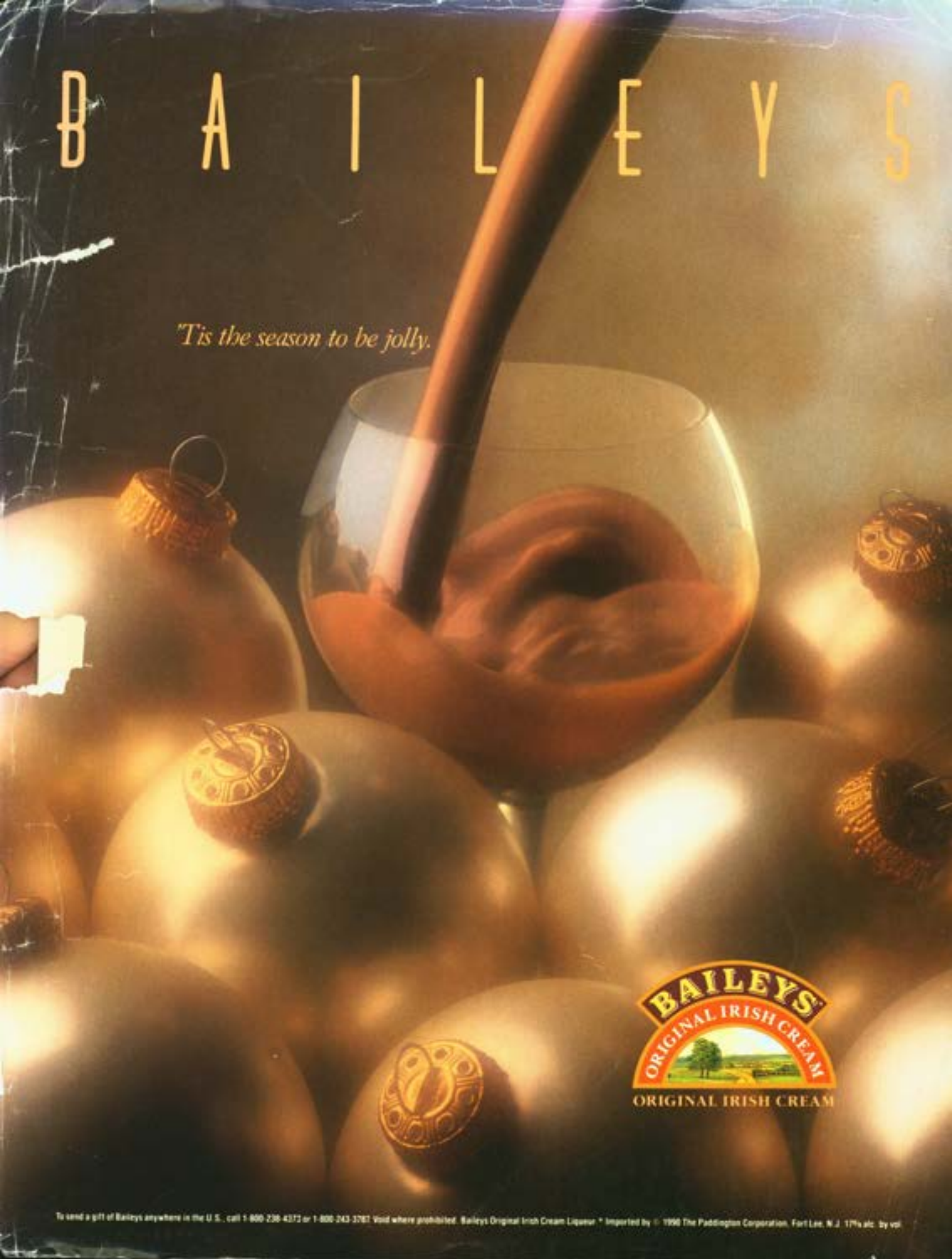
When I donate to an environmental organization, how do I know where my money is going? (Sarah Toland, Sacramento, California)

Most environmental organizations issue annual financial statements that show how their money was spent during the previous year and give goals for the coming year, according to a Sierra Club public-affairs spokesperson. (If you'd like to obtain this information for the Sierra Club, write to: Office of Public Affairs, Sierra Club, 730 Polk St., San Francisco, CA 94109.) If the group you have in mind doesn't provide this information, however, there are several other ways to obtain it.

First, you can request a copy of the organization's IRS Form 990, which gives an itemized breakdown of expenses.

If you're still curious, call or write the Registry of Charitable Trusts, a branch of the California state government. This office has financial information on file for all non-profit and fundraising organizations registered to do business in California. To obtain a copy of the file for the organization you're interested in, write to: Registry of Charitable Trusts, P.O. Box 903447, Sacramento, CA 94203-4470. Most national environmental groups should be on file, since the majority of them do business and raise funds in California.

Two other groups keep similar records: the National Charity Information Bureau, 19 Union St. West, New York, NY 10003; and the Council of the Better Business Bureau, Inc., 1515 Wilson Blvd., Suite 300, Arlington, VA 22209. ■



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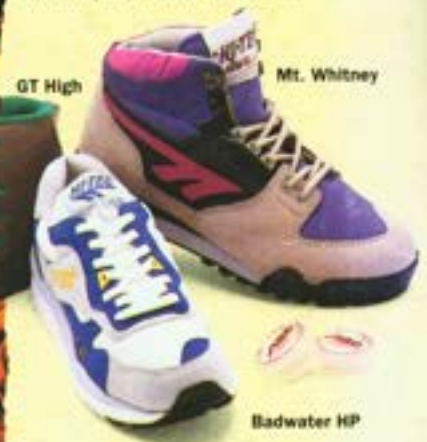

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