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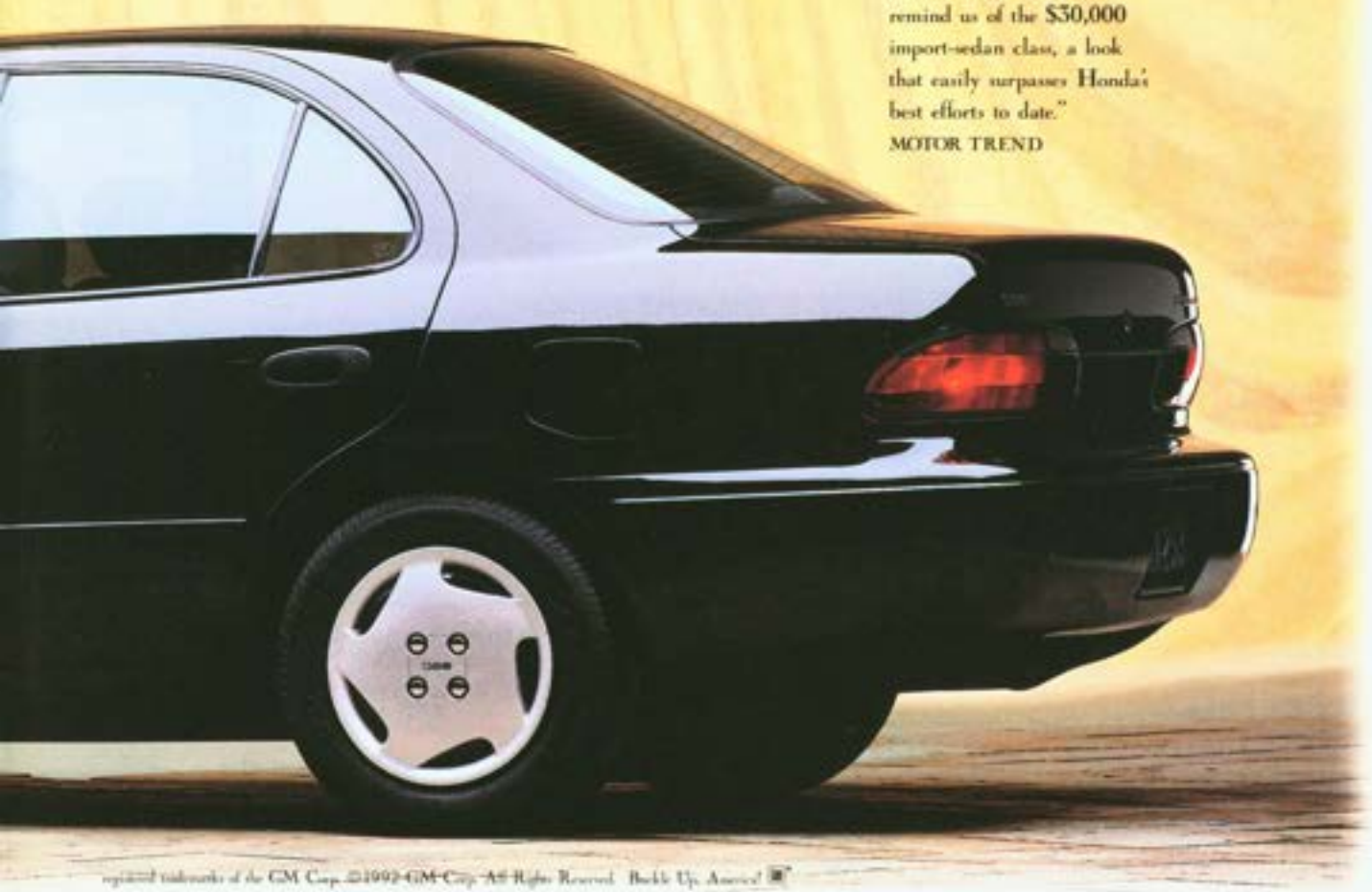

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FEATURES

MARCH/APRIL 1993 • VOL. 78/NO. 2

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CANN CLIFTON

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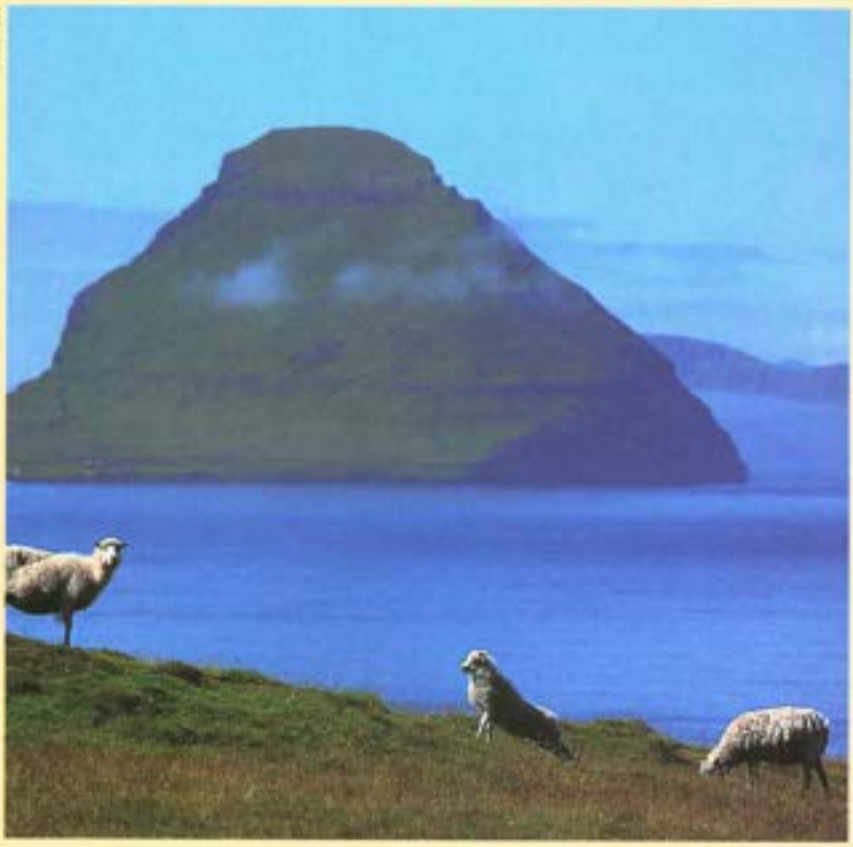

DEPARTMENTS

COVER

Columbia River Gorge National Scenic Area, Washington.
Photo by Steve Terrill

AFIELD

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PowerBars help prevent the energy lags that can occur after a couple of hours of backpacking.

Photos: Greg Epperson

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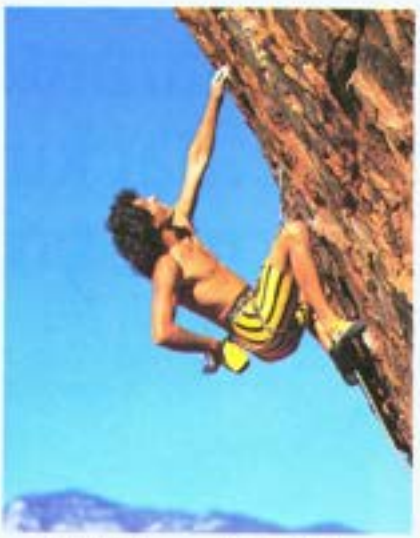

Scott Cosgrove is fueled by PowerBars on The Gift, 5.12d Red Rocks, California.

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Banana (medium)	100	2%	93%	5%	20%	5%	5%	5%	5%	2%	0
Apple (med. Delicious)	96	9%	89%	2%	11%	4%	2%	2%	3%	2%	0
Potato Chips (2 oz. bag)	300	60%	36%	4%	20%	2%	6%	4%	0%	2%	*
Snickers® (reg. size)	280	42%	51%	7%	0	2%	4%	8%	6%	2%	*

1 Snickers is a registered trademark of Mars Inc. Source for other foods: U.S.D.A., *Nutritive Value of American Foods*, 1985 * Information

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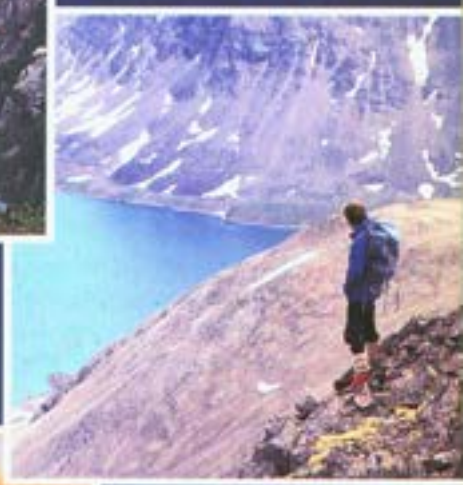

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LETTERS

BEARING RESPONSIBILITY

I was deeply offended by the "Last Words" question you posed in January/February for readers to respond to in March/April: "Should governments limit the number of children a woman bears?" Your question perpetuates an attitude that is responsible for the low status of women worldwide: their bodies are not their own, they cannot make responsible decisions (such as how many children to have), and they should be under the control of male family members or politicians.

I feel you owe an apology to your female readers. You have offended all of us by even suggesting that government should control such personal aspects of our lives, and not men's!

Catharina Wadley
Rio Nido, California

As sexist as it may seem, in the world of population demographics it is the woman's fertility that is measured, and the woman who is most often the focus of attempts to lower birthrates, whether by means of family planning, prenatal and neonatal health programs, literacy campaigns, or improved economic status. Our question was phrased deliberately to reflect that reality—it should not be read as suggesting agreement, and it certainly was not intended to offend. We felt that to use "family" or "couple" instead of "woman" would be ambiguous in this context (and perhaps insulting to women who choose single motherhood), but in our effort to avoid that minefield, it appears, we promptly stepped into another.

"Last Words" is a public forum; its purpose, as suggested by the recurring motto "A question of moment," is to promote discussion. While we do regret that many readers perceived an editorial point of view in the question, we are heartened by the thoughtful, wide-ranging responses we received, a selection of which appears on page 120.

For the record, the Sierra Club supports population stabilization by voluntary means, and has as one of its highest priorities the worldwide availability of family planning by the year 2000.

ENVIRONMENTAL JUSTICE

Sierra's attention to the South and the environmental-justice movement ("Southern Exposure," November/December 1992) was greatly appreciated. The Sierra Club has more than a few members who have been working—in some cases for decades—to bring environmentalists and traditional social-justice activists together. A 1979 Detroit conference on the environment, co-sponsored by the Sierra Club, the Urban League, the United Auto Workers, and others, may have been one of the first big environmental-justice events in America.

It's not necessary to travel to Dixie to see how waste and pollution affect the lives of poor and working-class people, however. In every part of North America, the people who have the least political and economic influence are the ones who wind up doing the dirty jobs and living in the dangerous neighborhoods.

Robert Murphy
Providence, Rhode Island

The cutting edge of environmental law is being honed in Alabama, where the Sierra Club is currently engaged in the largest and most important water-quality-protection case ever filed in the United States. The case involves a challenge to the most lenient water-quality standards in the nation, and seeks protection from any further pollution discharges for more than 40 bodies of water. The Club's challenge to Alabama's dioxin standard has progressed further than any challenge in any other state.

Environmental protection by government and industry is at its worst in Alabama, despite our high level of biodiversity. The Sierra Club is the only national group doing something significant here, and what it's doing in Alabama is important for the entire nation.

Ray Vaughan
Montgomery, Alabama

PEOPLE IN A LANDSCAPE

Rebecca Solnit's fine, ironic article on Yosemite's Indians, "Up the River of Mercy" (November/December 1992) not only fills in some neglected history, but argues cogently for concepts that have been neglected by preservationists from John Muir to Ansel Adams, who have thereby fallen into error when thinking about American Indians and the environment. Solnit cuts across the grain of Sierra Club history on these issues; my compliments for brave editing.

Robert H. Keller
Bellingham, Washington

"Up the River of Mercy" was too short; I just wanted to keep on reading. I was especially interested in the role of native people in a "natural" landscape, a role that needs to be better understood as agencies such as the Forest Service and the BLM move toward an "ecosystem" approach to managing their lands.

Solnit's article at first left me with a feeling of sadness. Growing up in Southern California, I visited Yosemite many times with my family. Indeed, those experiences are forever entwined with my feelings about the place. I don't go there much anymore; my childhood memories clash with the current reality of Park Service mismanagement and the presence of too many people in too lovely a place.

However, the uneasy feelings are giving way to the desire to go back and take another look. It's time I took my four-year-old son to this place of my younger days. Only this time, I hope, he and I can share a new perspective that includes appreciation for Yosemite as a home for countless earlier generations. I also hope that we can learn from the lessons of the recent past.

Bob Warren
Eugene, Oregon

Thanks for opening my eyes to how Yosemite was "prepared for visitors." It

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hurts to know the truth, but maybe it will help us change our attitudes and our ways. We must treat the few remaining native peoples of California as important, and view their culture as a significant and necessary part of our lives. Atrocities against indigenous peoples continue today, only they are more subtle than bloody wars and the physical removal of tribes from their homelands.

Carol Ducrig
Tenino, Washington

CAN'T WE GET ALONG?

Your celebration of Representative George Miller's abrasive, confrontational style of politics ("Chairman George," November/December 1992) is counterproductive to the goal of preserving the environment.

When Miller (D-Calif.) arrogantly brushes off a colleague by saying "I really don't have time for this kind of crap" and "I've got more important things to do," he reveals more commitment to self-aggrandizement than to any cause. A good part of politics involves being "politic." Building consensus liberates liberals and teaches conservatives how to really conserve, without either needing to compromise principles. Confrontation shifts the focus from problem-solving to self-righteous entrenchment on both sides.

Rolf Erdahl
Wichita, Kansas

Miller was angered by the fact that farmers, according to his statistics, use 85 percent of California's water to produce only 10 percent of its income. He's missing the point. Farmers may use too much water in some instances, on some crops, but they are not responsible for the fact that the use of that water produces so little income. We, the crop-consuming public, are responsible for that. What we are willing to pay for food and fiber is what determines the farmers' income. If farmers could get the financial return they deserve (without crop subsidies), the cost to the public would make the cost of subsidizing agricultural water look like a drop in the bucket.

Robert M. Marble
Sacramento, California

PLACE UPSETTING

Reed McManus, author of "Vertical L.A." ("Place Setting," November/December 1992), shows the usual California boosterism and/or complete ignorance of geography. He states, "The only mountain range in the United States that bisects a major city, the Santa Monica Mountains extend 50 miles from the Hollywood Hills west to the Pacific. . . ." First mistake: it is no more than 20 miles west and not more than 30 miles northwest. I traveled these distances for 42 years. Second mistake: it is not the only mountain range that bisects a major city. The Franklin Mountains not only bisect the city of El Paso but a large part of them (the 18 miles that are in the state of Texas) are within the city limits.

Gerald X. Fitzgerald
El Paso, Texas

The art that accompanied your "Place Setting" on L.A.'s mountains took a few too many liberties. That Nelson bighorn sheep took a long leap to get into San Bernardino National Forest from its home in the Sheep Mountain Wilderness in Angeles National Forest. And I'm not sure how the limber pine from Mt. Baden Powell made it over there, after having its roots implanted for thousands of years at 9,339 feet overlooking miles of high desert to the north.

Several wilderness areas got lost, too—the Cucamonga being the third on the Angeles, and San Jacinto a magnificent "twin" to San Gorgonio, across Interstate 10 in the two-part San Bernardino National Forest. (We'll forgive the omission of the three new wilderness areas immediately to the northwest, and just as close as those depicted, in Los Padres National Forest, since they were only enacted in June 1992.)

The mountains of Southern California south of the Sierra are a well-kept secret, and spectacular. There are now 21 designated wilderness areas, not quite completing the "Rim of Wilderness" that the Sierra Club set out to protect back in 1977, each within a two-hour drive of Los Angeles.

Sally M. Reid
Sierra Club Southern California
Wilderness Coordinator
Frazier Park, California

Reed McManus responds: *Mr. Fitzgerald's first point is correct: though the Santa Monicas range for 50 miles from near downtown L.A. to Point Mugu State Park on the Pacific coast, the point at which they first reach the ocean is only about 20 miles from City Hall.*

The second error cited is less clear-cut: when we considered the "major cities" of the United States, we looked only at the top ten. Had we gotten down to number 22, El Paso would have taken the honors as the nation's chief mountain-metropolis.

The folks who track such things for San Bernardino National Forest say you can indeed find bighorn sheep and limber pines in San Gorgonio Wilderness. As for the other regional wildernesses, we never undertook to mention them all. But it is true that Angeles National Forest has three such preserves, not two: Cucamonga Wilderness, while primarily in San Bernardino National Forest, extends into the Angeles. Congratulations are in order to the activists who helped establish five new wilderness areas in Los Padres National Forest, which extends from Central California to within 100 miles of Los Angeles.

NEW OIL FOR OLD

Marc Lecard ("Hearth & Home," November/December 1992) claims that increased regulation will improve the chances of used motor oil being recycled. This is not the case. In California, where there has been some regulation already, used motor oil has now become "stigmatized." A few years back I was always able to take my used motor oil to the nearest service station without any problems. Now, because of this stigma, it is not accepted at most service stations. Instead I now have to find a special collection center that will

THE 1993 SIERRA MAGAZINE PHOTO CONTEST

SIERRA INVITES ALL PHOTOGRAPHERS to enter its 14th annual photo contest. The winning images will appear in the September/October issue, which will celebrate *Sierra*'s first 100 years of publishing.

CATEGORIES

- Desert, Plain, and Prairie
- The Ways of Water
- Forests and Flora
- Abstracts and Patterns

Color images may be submitted in any or all of the above categories. One first and one second prize will be awarded for black-and-white photography, from images entered in all categories.

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HOW TO ENTER

All entries must be accompanied by *Sierra* magazine Photo Contest Submission Forms. To receive the forms, send $5 (this serves as your entry fee as well) to *Sierra* Photo Contest, 730 Polk St., San Francisco, CA 94109. No phone calls, please. Entries submitted without the 1993 forms, or with photocopies of the forms, will not be considered. All submissions must be postmarked by midnight, June 1, 1993; we suggest mailing your request for submission materials by May 15.

Photo: Lori Kezeluk, 1992 second-place winner, Desert, Plain, and Prairie.

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accept used motor oil, and then travel out of my way to take it there. This is not an improvement, and further regulation will only make it worse. I predict that you will soon have to pay someone to take it—so that those among us who are less environmentally aware will resort to backyard dumping to avoid paying a collection fee.

Instead of creating more laws, and penalizing people, I think a policy of offering incentives to encourage recycling would be more useful.

George Sinclair
Mountain View, California

Marc Lecard responds: *Rather than stigmatize it, designating used motor oil as a hazardous waste actually alerts more people to used oil's dangers to the environment and human health, and encourages them to dispose of it carefully. (California has regulated the disposal of used motor oil since 1978; since then the amount of second-hand oil collected has increased, to the point where California now collects and recycles more used oil than any other state.) Regulation should also force recycling programs to handle used oil more responsibly, avoiding the current situation wherein 63 former used-oil recycling centers around the country have been designated as Superfund cleanup sites. And by removing the economic incentive to burn or dump used oil, regulation of its toxics content might also encourage true, "closed loop" recycling—that is, rerefining old oil into new lubricant.*

ARTICLES OF FAITH

I believe that the Sierra Club would be better served if the writers for *Sierra* were a little more even-handed and a little less inclined toward the kind of anti-business bashing that comes from the pen of Paul Rauber.

Inefficient regulation that needlessly reduces the productivity of American industry reduces the size of the economic pie. Thus, when that pie is sliced up to provide for societal needs, the piece available for environmental management will undoubtedly be smaller. If environmentalists understand anything about economics, they will strongly support efficiency in environmental regulation. Almost universally, the most efficient forms of regulation will include market-based mechanisms for pollution control.

Mr. Rauber's dislike of the fact that Unocal Corporation ("Schemes That Go Clunk," July/August 1992 and "Letters," January/February 1993) chose to reduce air pollution via reducing automobile emissions is unfortunate, as that was and is the most efficient way for corporations in many urban areas to meet air-quality goals. I don't know Mr. Rauber, but I suspect that his views come from erroneous premises about pollution. All too often environmentalists cease being environmentalists and become environmental activists. The line between the two is crossed when pollution and polluters become the focus of a quasi-religious quest or vendetta. Pollution and companies which pollute become evil opponents. This is a seriously flawed view of the problem, and it does nothing but make collaborative efforts for pollution reduction more difficult.

The fact is that pollution is inherent in just about every aspect of human existence. Pollution occurs because of the laws of nature, which make the processes for converting materials and utilizing energy significantly less than 100-percent efficient and because our materialistic society demands so many consumer products.

If we are to follow Mr. Rauber's logic, then everyone is an evil polluter. Certainly intentional and unnecessary release of pollutants is immoral. However, release of pollutants at levels that are feasible with reasonable engineering and management practices can hardly be characterized as evil. The morally questionable activity driving the pollution problem in the developed world is our materialistic lifestyles. The other even more intractable moral question is the relationship of man to nature and our responsibility as thinking creatures to limit our population growth before we destroy all lifeforms, including ourselves.

Michael William Mullen
People for Responsible Environmental Policy
Troy, Alabama

Paul Rauber responds: *The difficulty here is that what seem to Mr. Mullen to be self-evident truths—that environmental regulation is bad for the economy, and that market mechanisms are the best way to control pollution—are actually only articles of faith, which may or may not be in agreement with reality. The former contention is disproved a few columns hence ("It Ain't Necessarily So," page 44); the latter was the subject of my original article. My conclusion, that improperly designed cash-for-clunker programs could end up as pollute-for-free licenses for industry, evidently offends Mr. Mullen's quasi-religious faith in the market. If he has any facts to buttress his opinion, he is welcome to present them. Failing that, however, I must protest the moralistic biases that he ascribes to me—although I admit to no shame at the label of "environmental activist."*

WHO IS THE ENEMY?

It was very disappointing to read the letter in your November/December issue from two Washington, D.C., staffers of the Sierra Club, Blake Early and Daniel Weiss, praising Richard Fortuna, the director of the Hazardous Waste Treatment Council (HWTC), a trade association of commercial hazardous-waste incinerator and treatment-facility operators. Their letter was a response to my article "In Name Only" (September/October 1992), in which I included Fortuna on a list of federal officials who helped regulate the hazardous-waste-management industry and subsequently found employment in that industry.

My article was concerned, among other things, with the lobbying power of the hazardous-waste-management industry and its ability to influence not only the Environmental Protection Agency, which I work for, but environmental organizations as well. It was therefore sad for me to see that the HWTC had successfully lobbied the Washington office of the Sierra Club to write that letter in its defense.

Early and Weiss are apparently not aware of the struggles of grassroots Sierra Clubbers around the country against commercial hazardous-waste

Continued on page 104

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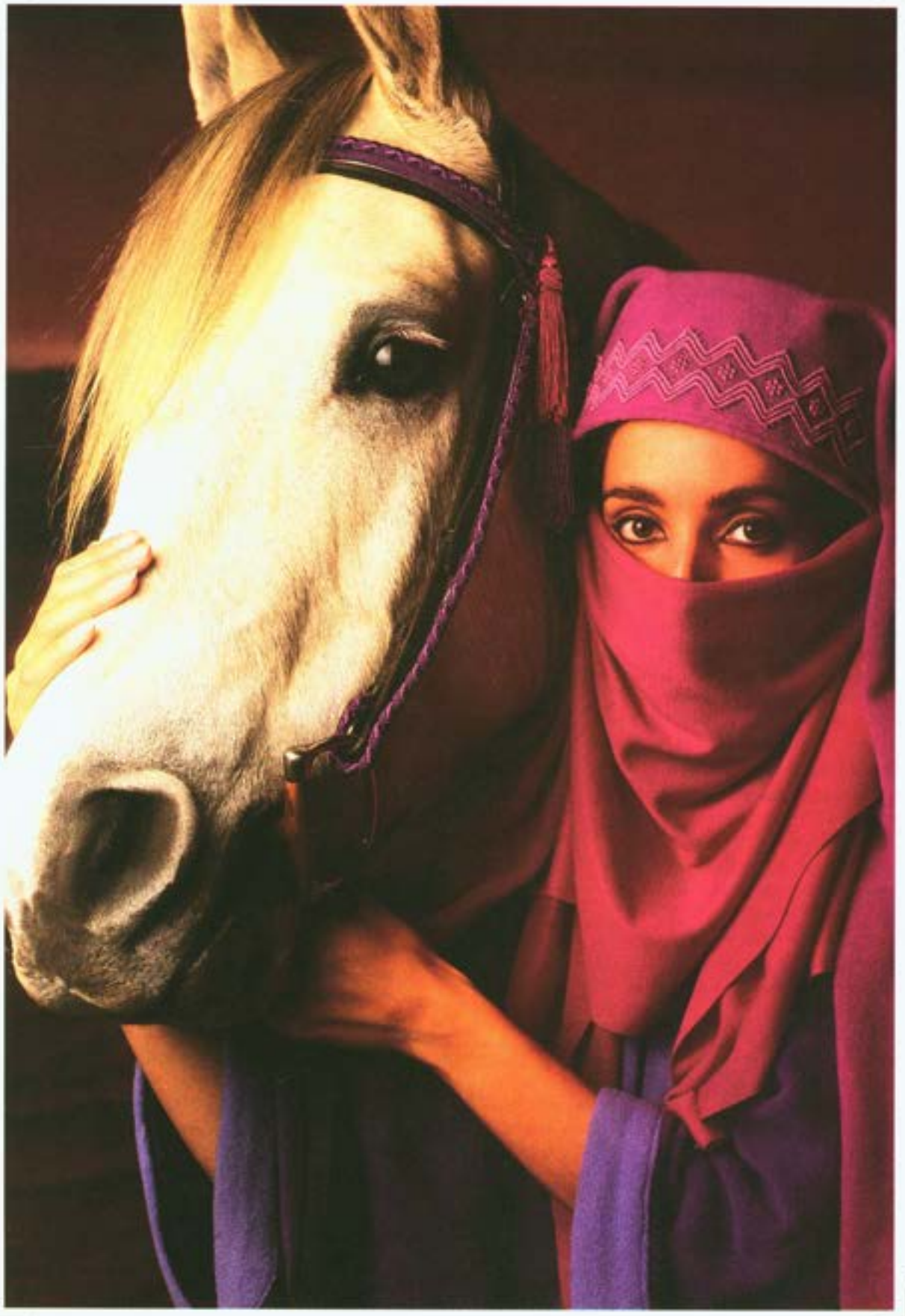


Want to Climb a Mountain?

In the autumn of 1973, 28-year-old Carl Pope came to work at the Sierra Club as an air-quality consultant. Pope had already served two years as a Peace Corps volunteer in India, three years as political director of Zero Population Growth, and had just signed on as executive director of the California League of Conservation Voters. For the next 19 years, in a number of capacities, Pope put his unique political and intellectual acumen to work at and for the Club. Last fall he was named the organization's fifth executive director. We sat down with him recently, after he had been in his new office for only a week, to pick that part of his brain—and it's no small part—that ruminates on how to save the world.

Sierra: *Let's start with the bad news. How much time does the planet have?*

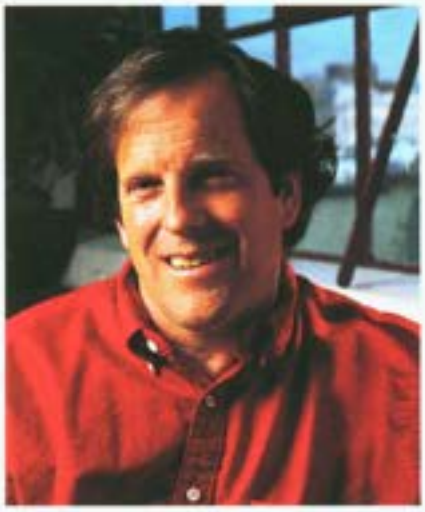
Carl Pope: In 10 to 25 years, if we continue on our present course, many natural systems will have unraveled beyond repair. If the current pace of primary-rainforest destruction keeps up, for example, the forests will be gone in 20 years; within 10 years all of the temperate rainforests in North America will no longer be ecologically sustainable. A doubling of the world's population is ensured; unless we change birth rates in the next 20 years we'll have yet *another* doubling.

Knowing all that, how do you manage to get up in the morning?

Well, we know that gigantic changes can occur very rapidly, often in the face of significant inertia. Remember, it took only three and a half years to dismantle the Soviet Union.

The analogy has some weak spots, of course. In the Soviet Union, the crisis was felt on a daily basis—it was not an event scheduled for the future. The environmental crisis is almost always something that is about to happen—and by the time it happens we might be too late to fix it. The global response to the ozone hole, for example, is now acceptably fast, and that's because the ozone layer is thinning right now. If it were going to begin depleting in five years, say, it would be much more difficult to phase out the guilty chemicals.

More and more the Sierra Club seems to be dealing with technical issues such as ozone depletion, global warming, international trade, and population growth—issues quite different from the Club's historic focus on wilderness preservation. Given the time pressures you cite and the absence of pretty pictures to remind people of these crises, how do we make such complex problems seem more immediate?



The decade of no excuses—with wistfulness at its end.

We've begun by electing Bill Clinton. Leadership at the top levels of U.S. government is terribly important, both because the United States has been the environmental leader in the world—while you can argue that in the last 12 years we've lost that role, it's historically true—and because the U.S. is the greatest single shaper of worldwide cultural attitudes. The one area in which our balance of trade is very healthy is ideas.

In some sense it's the role of organizations like the Sierra Club to find ways to take practical, concrete concerns and connect them to broader, more abstruse problems. Children in California, Texas, and Arizona, for example, would continue to be at risk from toxic chemicals released from factories in Mexico if a bad trade agreement were put in place. The Sierra Club needs to link these daily, real-life problems with global cycles and mechanisms.

How do we do that?

One of the most effective ways to do that, frankly, is politically. To some extent, when we elect people who will be responsible about the concrete, the local, and the specific, we also elect people who will be responsible about the abstract, the long-range, and the distant, because the ethos of responsibility is part of their character. Not many members of Congress who are highly responsible about protecting the natural areas and values of their constituents are going to be wildly reckless when it comes to the ozone layer.

We must also keep sight of the moral component of what we're about. A reasonably good definition of morality is that it's a force that makes us care about things that don't affect our immediate self-interest. One of the concerns I have about some of the current emphasis on using market mechanisms to clean up the environment is that it runs the risk of shifting the focus away from the moral imperative to do something about pollution. Economists are fond of arguing that rational investors and rational markets would in fact value future outcomes strongly. The savings-and-loan scandal demonstrates pretty

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conclusively that investors do not in fact look rationally at future outcomes. So I don't think we're going to be able to "account" our way into environmental reform; we're going to have to achieve it on the basis of righteousness.

So far, both Bill Clinton and Al Gore seem to suggest that we can have it all: economic recovery, economic growth, and environmental quality. Do you believe we can achieve a sustainable world with no change in the way we live?

The Clinton/Gore message is that leadership and technology will solve our economic and our environmental problems alike. That's only a partial truth. There are clearly aspects of the American way of life that cannot be sustained indefinitely. The addiction to the automobile is the most detrimental thing, and a preference for detached single-family suburban houses is the second—nothing else really matters except maybe our preference for eating lots of meat, though that seems to be changing. I would judge that the vast majority of the pure consumption component of environmental degradation is associated with transportation, housing, and food. Everything else we consume may be destructive because we use the wrong technology, but that can change. We can all have clothes and computers—we can even throw them away too often—at acceptable environmental cost, because they aren't the problem.

I think we could turn things around in the next ten years by changing the way we use technology and the technologies we use. To carry on beyond that, though, we'll have to deal with the tougher issues of lifestyle change.

What would you consider the top challenge to the environmental movement in the next decade?

Our major challenge is to speed up the pace of change. We're going in the right direction, but we're not going fast enough. With a new and sympathetic administration, we have the chance to move faster, but we also have the danger that the sense of urgency may fade. We need to make sure the public realizes that now is not the time to relax, but rather to intensify the demands for action from all of our institutions—government, business, academia. The 1990s need to be the decade of no excuses.

A generation ago, the Sierra Club was a much smaller organization. People tended to join because they personally knew other members who could acquaint them with its priorities. Now they join, by and large, through direct mail and other mass outreach efforts. How do you propose to hold on to members, to make them feel part of the organization?

One thing we have to do is set our goals more clearly, and sooner. Then we can turn people loose to pursue those goals. In terms of mobilizing people, our long-term campaigns have been the most successful. We mobilized an entire generation of Sierra Club leaders around the decade-long fight to save Alaska, another generation around the policies of Ronald Reagan, and yet another around protecting the California Desert. Things that we do only for a year don't have the same power. So part of the trick is figuring out what we're going to do and identifying it further in advance, so there's more time for people to learn about the issue, get

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How is the Club's approach to activism different from that of other environmental organizations?

One of the cardinal principles underlying the Club's work is that elites will not solve the environmental crisis. Elites are in fact the source of the problem—they tend to overestimate their wisdom and understanding, they have very short time horizons, and their institutional interests are almost always more important to them than the interests of the planet.

So the Club's democratic and grassroots nature is its greatest strength. It enables us to work on problems from the most local to the global, from wilderness to nuclear power. It gives us access to every imaginable form of expertise: biologists, teachers, machinists, engineers, artists, lawyers, nurses are all part of the Club's grassroots network, and we can take advantage of their knowledge and talents.

There is also a special credibility that comes from representing more than half a million households, in every community in the country. When the Sierra Club speaks it gets a special hearing because decision-makers know that our positions have been developed through an extensive process of consultation that involves thousands of volunteers, and that those activists will back up their beliefs with action. We also have a deserved reputation for sticking with a problem until we lick it—it took 68 years to get Mineral King into Sequoia National Park, but we did it. Our grassroots network makes that tenacity possible.

We're grassroots, we're democratic, we're activists, and we're committed—that's a powerful punch that almost no one else packs.

Is there in fact a critical mass of Sierra Club members that's necessary to support our programs financially and for us to remain an effective lobbying organization?

I have a friend in Washington who says that there are three really crucial environmental organizations. The Nature Conservancy, because when corporate America comes to God someone has to take up the collection; Greenpeace, because someone has to keep us honest; and the Sierra Club, to get the job done. I like that definition of the Club: we are the organization that makes things happen.

That means several things. It means that it is very important that the Sierra Club be able to put its resources where they can do the most good: when we see a chance to get something done, we have to be able to move quickly. Membership dollars enable us to do that—to bring a lawsuit, to fight for a political candidate, to respond to a legislative crisis. So in a rough sense, we will be stronger if we can grow from our current 600,000 members to 750,000 or 800,000. If we were to fall back to 300,000 we would be substantially weakened.

I don't believe there is any enormous political reason to have, say, 700,000 versus 600,000 members. What *is* politically critical is the number of members who are actively engaged in the work of the organization. That's only partly influenced by the number of people we get to join us; it's mainly influenced by the quality of the experience we offer them once they join. And we have not successfully harnessed even a fraction of the human energy that is available to us. To me, there is no single greater internal challenge than to get more people involved.

Okay, so let's say someone gets involved as a local activist—and then finds him or herself disagreeing with strategic decisions being made on the national level. How do you respond?

Let's say we want to climb a mountain—that's always a convenient metaphor. I think it's important that there be different groups of people trying different routes up to the top, because I don't think you *can* know in advance what's the best route. I'm perfectly comfortable having people take different routes, as long as there's the commitment to get to the top of the mountain. We shouldn't take a path that leaves us 500 feet below the summit, unable ever to reach the top. In practical terms, the question is often "Which strategy will play out in the legislative arena?"

Some would say those kinds of differences crop up because the Sierra Club is a wondrously complex organization. But just as often it's considered an unridable horse.

Most organizations have an organizational myth that is glorious and elevated, and an organizational reality that is human and somewhat grimy. The Sierra Club has a reality that is indeed human and grimy, and a myth that is completely dysfunctional. I mean that the myth of the Club is much harsher than the reality. The Club is actually a much easier place to get things done than most people think it is.

I sometimes feel that I'm walking through a maze with a bunch of people, except that half of the walls in this maze aren't really there; they're holograms, and I have special glasses that enable me to see which walls you can walk through. I would like to get rid of the holograms so people could really *see* the organization, and understand it, and appreciate what everybody does.

How would you like to see the Sierra Club in the year 2000?

I would hope to see an organization that was somewhere between its present size and double that, but with ten times as many people actively involved, that came much closer to reflecting the ethnic diversity of the United States, and that had, in addition to the present generation of leaders, at least two more generations, so that young people didn't say, "Oh, the Sierra Club—that's my parents' environmental organization."

Beyond that, I'd like to see that we had simplified ourselves sufficiently so that people were seeing the Club as a much more friendly and accessible place, where activists can come in and become effective much more easily and much more quickly.

I would also like to see it as an organization that in some sense had a mood of wistfulness because the great conservation challenges had been met. And the Sierra Club leaders of the year 2000 would look back on a successful last decade and say, "Weren't those the days, when we didn't know if the planet would be saved!" ■

NATURAL SELECTIONS

Storm Search

BOB HENSON

"You actually go out and try to *find* tornadoes?" That's the usual response when I tell people I'm a storm-chaser. I admit that I like the contrarian feel of my pursuit, but my reasons for taking 10 or 15 days each year to follow severe weather across the Great Plains are deeply rooted: I'm a Plains kid, born and bred in Oklahoma, and entranced by the hyperstorms that rule the state each spring.

I now live in Boulder, Colorado, poised on the edge of the Rockies. It's the perfect place for a meteorologist: 20 miles to the west, the alpine tundra is capped by air startlingly fresh; 20 miles east, the land is flat and the clouds take center stage. March through June every year, I scan the weather maps daily for signs of a storm outbreak. Often there will be several days' notice: moisture creeping northwest from the Gulf of Mexico, a dip in the jet stream traversing the Rockies. On other days, however, the morning data unexpectedly reveal an immediately potent setup. I scramble for camera, tripod, film, radios, and maps and hit the road.

On a good chase day, the sky is pulsing with energy by four o'clock. Tiny cumulus clouds become exploding mushrooms in the space of an hour. The skies pass through countless grades of navy blue, slate gray, pitch black, and emerald green. Bolts of lightning singe the air. A renegade hailstone the size of a plum thumps on my car's roof. I get a full-body twinge of fear, of electric uncertainty.

The evening shades into night while the storm grows mature, the sharp lines of its youth fading as it becomes a ragged rainmaker. Before I lose the chase to darkness, I've gotten photos and, with luck, some things to ponder: a rare cloud arrangement, a tug-of-war between storm cells, a funnel that inexplicably fails to hit ground.

Storm-hunting has its physical dangers, and it can be dangerous to the soul as well. From a safe distance, I watched a tornado as it churned through Andover, Kansas, in April 1991. Driving away, I passed through hundreds of tiny pink shards floating to the ground, insulation from a settlement of mobile homes that had just been destroyed. That night in my comfortable motel bed I felt that chasing storms was no better than chasing ambulances.

More often, I convince myself that storms are not chaotic beasts, but incredibly intricate systems bringing a hundred equations and theories to life. Last June I went east of Denver with a friend. We positioned ourselves beneath a roiling cloud base, its updraft so strong that no rain could fall from it. Out of that base, about six miles south of us, a smooth-as-silk funnel spun downward. Flowing up to meet it was a bundle of tossing dust with a translucent tube at its core. There was hardly a farmhouse for miles around—nothing to be destroyed, nothing to destroy the purity of the storm.

It was Ken's first tornado, and my thirteenth. I knew we had perhaps five minutes to take photos and learn the scientific lessons. But five minutes were all we needed to achieve the stormchaser's ultimate goal: to observe and document the swift beauty of the atmosphere at work. ■

A man in a car,
just trying
to catch the wind

BOB HENSON *is the author of* Television Weathercasting: A History *(McFarland, 1990), and a writer with the National Center for Atmospheric Research in Boulder.*

At Dusk

HANNAH HINCHMAN

To draw these battered aspen branches, I'm using a pen that makes marks with a weighted, wet feeling. For the massive trunks, covered with wounds, I'll use a watercolor brush dipped in ink, making some of them black and solid and others ragged and rough, with pieces of the paper showing through. Shadows are rising in the early dusk—a wash of ink and water will unite them, pulling ink out of some of the pen strokes, diminishing the light on the page.

I know the deer are nearby. A herd of about a dozen files along this trail most evenings. At sunset, with the last of the day's businesslike energy, I had pulled down the barbed wire on one side of the property and removed poles on the other at the point where the deer trail crosses them. Among the deer is a fawn that walks on three legs, one front knee enormously swollen, wounded or injured in some way. In that condition it can't be easy to slither through or under the fences, as fawns do.

For a moment the wind comes up again and rattles a couple of aspen leaves still clinging to a twig. It bends a few stalks of dry brome, and they add a frail hiss. Those sounds and the near-darkness combine into an old loneliness I know well. To include it in the drawing will require a certain kind of austere mark, subdued and spare. A few strokes made with a thin-pointed brush record the presence of loneliness, though no one else may see it.

Eight deer have arrived. Their precise steps leave tracks like a flinty, lowercase alphabet, and they distribute to browse in an even, formal design. I worry about the injured fawn, which is not with them now. Drawing, and the loneliness, have exposed me.

This window of vulnerability opens up in me from time to time, briefly. Willingly or unwillingly, when I go deep into the thicket of a drawing I become connected to the thing seen. Such glimpses don't seem to be of my

Drawing closer

to the

far away

making. The evening I first saw the fawn, I felt for a minute that I was inside its body; hence the decision to drop the fences. Moments of active empathy have their own authority.

I think about the range of loneliness in the world. There's the loneliness of walking down a suburban street at dusk, looking into unfamiliar lighted rooms. There's the loneliness of an old field in Ohio, in March, just before a woodcock starts to call. Another loneliness: driving late at night past farmyards illuminated by a single mercury-vapor lamp. This peculiar desolation seems to gather at dusk, is displaced by expectancy toward dawn, and is drowned by activity in the daylight.

Thoreau felt the loneliness when the wind blew across a telegraph wire, his "aeolian harp." Few artists paint it anymore, preferring images of chaos or inwardness, but Georgia O'Keeffe put it into her paintings and called it "the far away." "It has an age-old feeling of death on it," she said, "and I love it with my skin."

We insulate ourselves from the loneliness by keeping to the lighted room, away from the dusk. In the process of cultural flattening, it's one more state we deprive ourselves of. The tendency is toward a comic-book range of emotions, a diminished language, an art confined to self-reference or politics. I wonder which other subtle responses, bound up with places and seasons, times of day or night, we have edited from our completeness.

It's become too dark to draw now, though the pen still feels active in my hand. The injured fawn is not among the deer. Tonight the loneliness has left me vulnerable, feeling too strongly the fragility of lives and bodies, human and animal. I can carry that knowledge as a weight, or feel it as empathy, and let it bind me more closely to the world. The deer drift into a grove of junipers, as complete as any creatures have ever been. ■

HEARTH & HOME

Varnishing Point

■

MARC LECARD

The four wooden chairs stood around an invisible table in the back of a junkshop. They were covered thickly with paint, the top layer a vile, stomach-pump green, other colors gleaming dimly through chips and scratches. The carving in the chairbacks was nearly filled in by repeated coats; the wicker seats were rotting and torn. In other words, priceless treasures.

I bought them for next to nothing and carried them home triumphantly: my first refinishing project. A book or two from the library on the subject, a quick trip to the hardware store for scraper, steel wool, gloves, and paint stripper, and I was ready to get down to bare wood.

The paint stripper was a fearsome-looking substance—a thick, pink glop—and I read the instructions carefully. It certainly worked quickly—the paint bubbled off in a few minutes—but it stung like hell when some sloshed on my unwittingly exposed wrist. And in spite of my attempts at thorough ventilation, in 15 minutes I had a wrenching headache.

My problems were predictable: most paint strippers are a seething brew of noxious chemicals, chief among which is methylene chloride, listed by the EPA as a probable human carcinogen. Permanent scarring and eventual carcinoma aside, nearly all paint strippers are made with petrochemical solvents that release volatile organic compounds (VOCs) as they evaporate; VOCs are a contributor to the formation of smog. And, of course, paint remover is considered a household hazardous waste.

■

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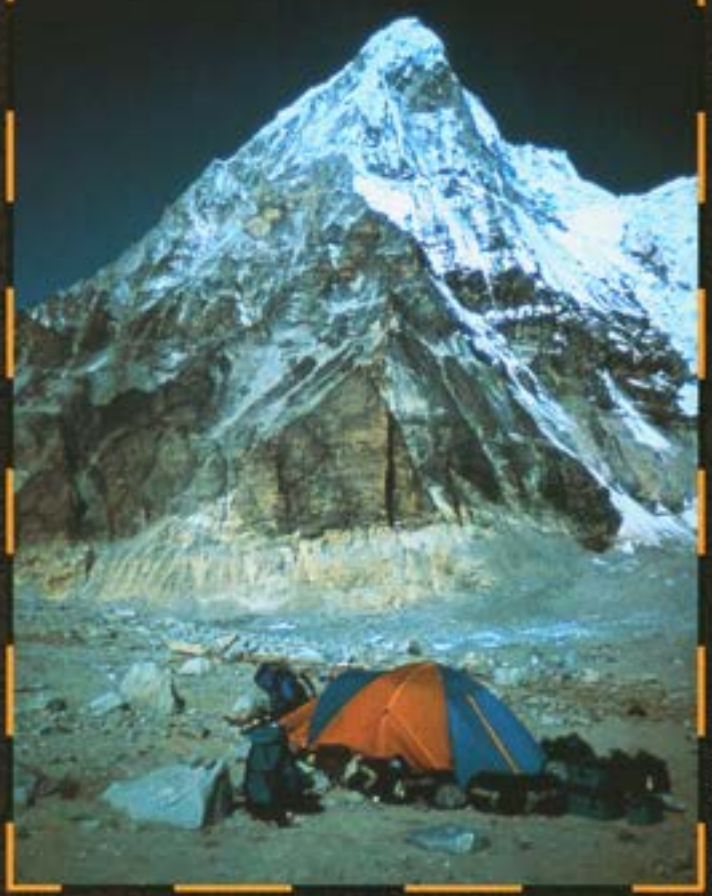

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making safe disposal as difficult as it is necessary.

Under regulatory pressure, several manufacturers have come out with paint and varnish removers made without methylene chloride, which has already been banned outright in New York and California. One I tried recently, Woodfinisher's Pride, contains no methylene chloride, methanol, or any other petroleum solvents, and can be used indoors with ordinary ventilation. It also claims to be nonflammable (I couldn't set it on fire, anyway) and biodegradable, and comes packaged in a recyclable plastic container, coded "other." (This kind of plastic can be difficult to recycle, but the manufacturer offers to take any containers you can't find a home for.)

The green gel reminded me at first anxiety-filled glance of my past unpleasant experiences with paint removers, but it lacked the sharp chemical reek that forewarns of headache and tumor formation; instead I had to put the bottle almost under my nose to get a whiff of its soapy, vaguely citric scent. A drop on the skin failed to produce the instant burning sensation of the old stuff (though the label bears stern warnings about skin and eye contact). It goes on easily, takes half an hour to do the job, and stays wet for several hours, so you can coat the entire piece you're working on in one application. Paint comes off nicely with regular stripping tools, and wash-up requires only soap and water.

Using reformulated paint remover to rehab wooden furniture makes ecological as well as economic sense: you can keep beautiful old pieces in circulation, take a breather from high-powered consumerism, and help in a small way to save trees and prevent smog. And with nontoxic strippers and varnish removers, you can refinish your finds without finishing off yourself. ■

► *For more information, see "Resources," p. 106.*

GOOD GOING

A Sense of Plaice

■

PAUL RAUBER

The Faeroe Islands are not for the faint of stomach. For starters, the ferry that connects this grass-covered rockpile to Norway, Scotland, and Iceland was built for the placid Baltic, not the North Sea. My abhorrence of Dramamine leads me to the ship's bar, where I fortify myself against the sickening pitch and yaw of the flat-bottomed vessel. There a fellow traveler recalls a passage late in the season (i.e., September) that ended with passengers and crew lashing themselves, Odysseus-like, to masts and praying for speedy death; when the ship arrived in port, no one had the strength to throw down the hawser.

■

Insular indigestion in the dour North Sea

The sudden apparition of the Faeroes themselves is startling: the 18 islands jut from the sea exactly like Arizonan mesas, except that they're half-covered with water and a vivid green. They are very small and easily missed; one story has it that they failed to gain full independence from Denmark after World War II because a beer bottle covered them on the conference-table map.

We put in to Tórshavn (Thor's Harbor) on *Ólafsøka*, the high point of the Faeroese social calendar, when the country's entire ambulatory population squeezes into the capital city, dons Mexican hats, and parades up and down the main street in varying stages of inebriation. Here I have the honor of offering the president of the oldest legislative assembly in Europe a pull from my pocket flask—an invitation he politely declines until a later hour.

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Gevalia Kaffe is not sold in stores; instead we will deliver it to your home. Choose whole bean or ground, Regular or Naturally Decaffeinated. A special note: we remove caffeine

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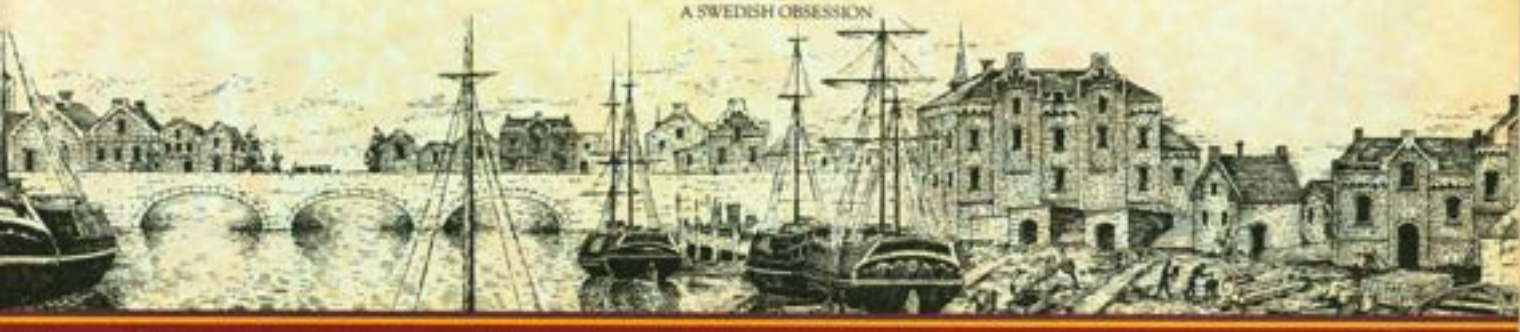

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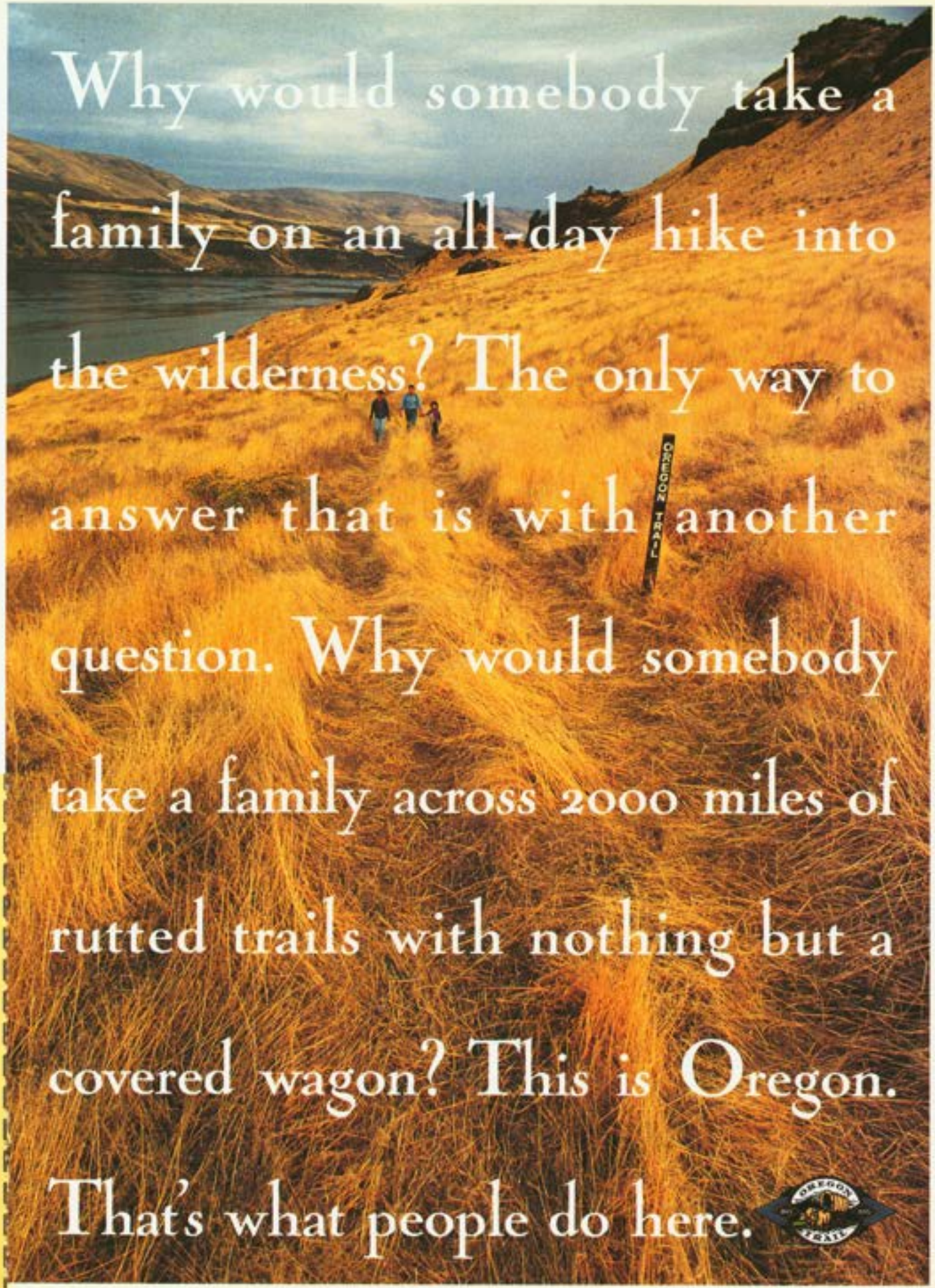
Why would somebody take a family on an all-day hike into the wilderness? The only way to answer that is with another question. Why would somebody take a family across 2000 miles of rutted trails with nothing but a covered wagon? This is Oregon. That's what people do here.
OREGON TRAIL

sular folklife, I flee across the straits to the island of Nólsoy, a mile long, a couple hundred yards wide, and a century back in time. The boats in its harbor would have been instantly familiar to any Viking: high in the prow, low amidships, with elegant overlapping strakes and two to ten sets of thin oars. A British puffinologist leads me on a clamber over moor and bog to the island's southeastern cliffs, whence the "sea parrots" launch themselves like flying cigars in search of fish. Puffins out for an evening stroll on the cliff edges are easily snared by unsentimental Faeroese, and are served on special occasions smothered in caramel sauce.

The notion of caramelized puffins seems unexpectedly whimsical for a people who personify the word "dour." The relentless hostility of Faeroese nature leads to gloomy self-absorption. Hitchhiking out of Tórshavn, I catch a ride with a long-faced gentleman who drives in silence over fog-shrouded fens into a steady downpour. As we near my destination of Kollafjord, a small fishing village (the description suits every town in the Faeroes), he begins and ends the conversation by pointing a bony finger out the window. "*Regnet*," he says. "It's raining."

Kollafjord is a palette of parti-colored houses strung out along a fjord, sea in the front yard, pasture in the back. *Faeroes* means "sheep islands"; sheep are it for megafauna, if you don't count beefy fishermen and the seals who change into women to lure them to watery graves. Otherwise, were it not for the imported rats, rabbits, and ineffectual sheepdogs, there would be no warm-blooded life here at all.

In search of dinner, we seek out Carsten, the local carpenter, a barrel on legs who swings a Thor's hammer and dances on roofbeams like a Hyperborean ape. In his Viking boat (the finest craft I have ever rowed) we pluck plaice and cod from the icy waters of the fjord while the puffinologist tells of trolling the waters of Loch Ness at midnight with a calf's head, fishing for the Monster like Thor fishing for the Midgard serpent. Alas, our hosts are unimpressed with our catch, far preferring the local delicacy of *skarpe-kød*, raw mutton "sharpened" by hanging it out in the weather until it acquires the *je ne sais quoi* of decomposition.

Another treasured respite from lambchops and codfish is pilot-whale stew, made by boiling chunks of whale-flesh together with an equal amount of blubber. The traditional Faeroese fondness for this dish (a subsistence staple within living memory) has led to a certain international disrepute; even delegates to the International Whaling Congress meeting last July in Glasgow were shocked by video footage, taken only hours earlier by the Environmental Investigation Agency, of a bloody pilot-whale hunt on the island of Vidoy. The usual strategy is to drive a pod of whales up a fjord until they flounder in shallow water, whereupon hunters wade in to kill them with spears, gaffs, and the elaborate whale knives that are a standard part of Faeroese dress. The grisly spectacle is made even more heartrending by the cries of wounded whales and the stubborn refusal of pod members to abandon their dying comrades. During my visit, a rare pilot-whale hunt takes place one Saturday night in Tórshavn itself, with drunken Faeroese in evening clothes leaping into the blood-red waters to stab the heaving creatures with their long knives.

One afternoon in Kollafjord, the mayor comes by with the exciting news that a fin whale has been captured, and is being slaughtered at the whaling station in the next fjord. (The Faeroese have officially abandoned commercial whaling, but if they're out fishing and a whale happens to swim by, well, that's not really commercial, is it?)

The mountain of flesh has been winched up a concrete ramp where blue-suited men are scoring great gashes in its side with scythe-shaped knives, then using hooks to pull off enormous slabs of steaming red meat; these are hurriedly cut into ten-pound chunks, loaded into wheelbarrows, and set on racks to cool.

The ramp runs red. Several American tourists throw up. A young biology student from Cambridge, with a knife just out of its plastic, hacks at the guts exposed by the harpoon: "This must be the uterus! Yes, it's the uterus!" I find myself curiously detached, like a child watching a serious traffic accident. I am fascinated by the texture and color of the whale's flesh, the huge black tail fin, and the bristly baleen. But I cannot look at its great eye. ■

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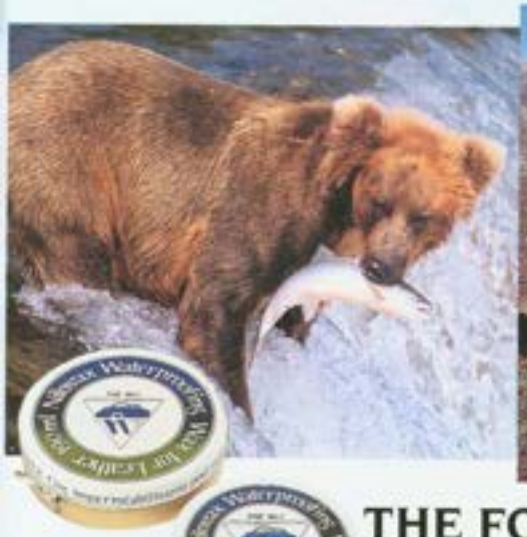

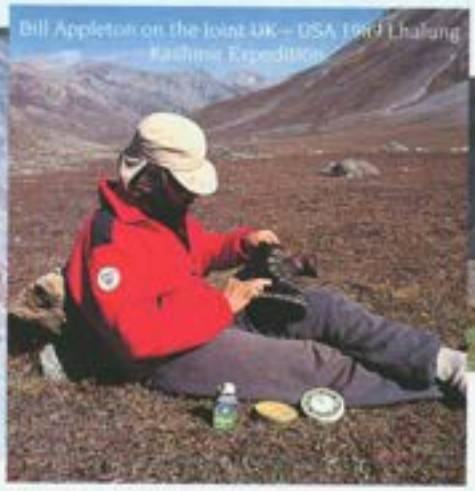

Bill Appleton on the Joint UK – USA 1969 Lhalung Kashmir Expedition

Trevor Willis treats his boots with Nikwax during 1992 MATHO KANGRI EXPEDITION

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NIKWAX WATER BASE

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NIKWAX WATER BASE

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NIKWAX
LEAD BY INNOVATION

BODY POLITICS

Big Drop

MICHAEL CASTLEMAN

The phrase "population explosion" conjures up frightening images of a planet overwhelmed by a mass of humanity it can no longer support. But recent research confirms that we have another population problem as well, one that might be termed the "population implosion"—a steady, 50-year decline in the number of sperm.

The case of the dwindling sperm first came to light about 15 years ago when researchers compared then-current sperm-count findings with similar studies from the 1930s. They discovered that among healthy adult males who were not being treated for infertility, the average sperm count had declined by about 40 percent, from 120 million sperm cells per milliliter of semen to about 70 million.

The researchers speculated that sperm were not really on the wane, but that the lower numbers were a result of improved microscopic counting techniques, increased sexual activity (which leaves men with depleted reserves), or the increasing popularity of tight-fitting underwear (which hold heat-sensitive sperm unnaturally close to the body, killing some).

Then in 1979 a Florida State University professor analyzed student semen samples and discovered not only surprisingly low sperm counts, but alarmingly high levels of several toxic chemicals, including DDT and PCBs. He suggested that environmental pollutants might be causing the sperm decline.

That report triggered a flurry of sperm-count studies, which produced results all over the map. Some showed average sperm counts in the low 55 to 75 million range, but others showed counts well above 100 million. Only men occupationally exposed to high levels of toxic chemicals were found to have semen loaded with pollutants. Most scientists held to the view that changes in counting techniques were responsible for the reported dip. After a few headlines, the "sperm crisis" became yesterday's news.

But sperm-count research continued around the world—there have been more than 20 reports since 1984—and last September the British Medical Journal published an analysis of the 61 best studies from 1938 to 1990. The researchers, statisticians at the University of Copenhagen, took great pains to minimize the effects of any changes in counting techniques and sexual activity. They examined not only the averages presented in the 61 papers, but also the ranges of sperm counts obtained, a statistical technique that produces a more persuasive analysis. They found that average sperm counts have decreased 42 percent, from 113 million to 66 million sperm cells per milliliter. Their conclusion: "There has been a genuine decline [in sperm count] over the past 50 years."

The next question is, why the drop? Forget tight underwear: it doesn't raise intra-scrotal temperature enough to account for that much of a slide. Once heat, sexual activity, and counting techniques have been eliminated as causes of the decline, only one plausible culprit remains: environmental pollution. While the authors of the study are cautious about assigning blame, they do venture to suggest that "such remarkable changes in semen quality . . . over a relatively short period are more prob-

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ably due to environmental rather than genetic factors."

Sperm cells are the most delicate in the male body; exposure to low levels of toxic chemicals, which might not harm hardier cells, can kill them in large numbers. During the past decade there have been several studies that have documented sudden major drops in sperm counts (some to the point of sterility) in workers in the chemical and pesticide industries. Fertility resumed when toxic exposure was eliminated. As the general population has been exposed to increasing levels of pollution, the effects have been less dramatic, but the Copenhagen study suggests that even at low levels of exposure environmental pollutants may be hitting the general male population below the belt.

(The Copenhagen researchers also speculate that the decline in sperm may be associated with the increase in the rates of testicular cancer, which soared 35 percent between 1973 and 1988. Danish men, for example, have an incidence of testicular cancer five times higher than that of Finnish men—and a sperm count some 46 percent lower.)

Given that it takes only one sperm cell to fertilize an egg, is this really a crisis? All species have evolved certain redundancies in their reproductive systems to allow a margin of error; from this perspective, men produce more sperm than absolutely necessary. The current consensus is that 20 million sperm cells per milliliter of semen are adequate for normal reproduction—below that number, men are considered "subfertile." If the average sperm count has dropped from around 100 million down to 60 million, we're not in imminent danger of dying out as a species, but we're considerably closer than we were a mere 50 years ago. And while humanity does need to curb its instincts to be fruitful and multiply, there are probably better strategies than extinction. ■

WHEREABOUTS

A Mind of Winter

■

SUE HALPERN

A few weeks into autumn and it is snowing in the Adirondacks, bowing the hardwoods and fleecing the tamaracks, which lately have turned to yellow. No one who lives in these mountains would call this weather unseasonable: every landscape has its season, when the angle of light, the folds of the earth, the particular array of colors seem to bless and complete it, and here that season is winter, whenever it arrives. In winter the Adirondacks secede without declaration, remove themselves from civilization as if their entire 6 million acres were on retreat. The acoustics become rounder, the forests open up. There are two dominant colors, white and green, and no apparent need for any other.

Had I first seen these mountains in May or September, it is possible I would think that the damp new leaves of spring or the spectacle of fall best displayed their contours. But I first saw them in November, when the trees were stripped to the bark and the

CHRIS CLIFTON

frozen ground seemed to call for snow as if it were a vocation. And then it did snow, and the world grew still and settled into its skin. "One must have a mind of winter/To regard the frost and the boughs/Of the pine trees crusted with snow/ . . . and not to think/Of any misery in the sound of the wind . . ." Wallace Stevens writes. And so it is with me.

I did not mean to move to the mountains, to make a home and a life. My husband brought me here, only he wasn't my husband then, the house we stayed in wasn't yet our house, and I had no idea that it ever would be. On the map the place we were going that weekend was called Adirondack Park. At the time I was living in New York

An unexpected song in the unimagined mountains

City, and as I understood it, Central Park was a park, because as much as you might want to, you couldn't live there. But here I was, five hours north of Manhattan, in a wilderness as untamed and vast and separate as any imaginable, shared by bears and coyotes and eagles and herons and people alike. What was unimaginable was becoming one of those people.

"It's so far," my friends who lived in places like Boston and New York would say of the Adirondacks, and for a while I knew exactly what they were talking about—the 250 miles between. But after a time I began to understand that the true measure of distance is not feet or miles, but proximity to the things you value or need. The night sky, say. Or a field of Indian paintbrush. Or a house in the lee of a mountain. By then I had been living in that house a year or two.

In a way, it is the presence of people, as much as that of peregrine falcons or certain rare varieties of arctic moss, or the Adirondacks' sheer size, that make this place unique. Adirondack Park is an experiment in cohabitation and in restraint. How deep in the forest can human beings live and still maintain the trees as well as ourselves? It is possible that this experiment is about what is really meant when people talk about living in harmony with nature: learning to sing the descant rather than the melody—and a booming, offkey melody at that. Living in a park, being but one of many creatures, rearranges the score. You learn to listen for the other voices. You get excited when you hear them.

Years before I lived here I read a passage in a book by Abraham Joshua Heschel that has stayed with me: "The greatest hindrance to knowledge is our adjustment to conventional notions, to mental cliches. Wonder or radical amazement, the state of maladjustment to words and notions, is, therefore, a prerequisite for an authentic awareness of that which is." If I look at a mountain and think I know what a mountain is, I will only see what I already know, and what I know is not only limited, it may not be true. Seeing an otter, or watching a wild turkey saunter across the backyard, or hearing the antiphonal hooting of bears at night are the beginnings of the wonder, the radical amazement that sustain me here.

I had always imagined myself settling along a rugged coast somewhere in New England or Northern California. I would live in a house that stood on stilts above the water; the wind would be a constant companion. The surf would crash on the rocks below, the tides would plunder the beach. If there were mountains in this picture they were far off in the distance. They could have been clouds.

As it turned out, I moved inland, not because I knew already that I loved the forest, but because I loved someone who did. It must have something to do with love's transforming power that before long I had abandoned my ideal landscape for the one I see when I look out the window of this room: a sea of hemlock and pine, and the wind riffling it; water rushing down the creekbed; the saddle of the mountain that rests in this valley like a glacial erratic. That I can see these things—that is, that I can look at them and not know them and so begin to see them—might be because they were not in my head to begin with.

Outside my window the snow is falling hard and fast. And I think: there is no misery in the sound of the wind. ■

SUE HALPERN *is the author of* Migrations to Solitude *(Vintage, 1993).*

Edited by Reed McManus

Friends of the Devil

Sinners, awake! "We are being deluged by wave after wave of terrible atheistic errors in our schools," Robert Simonds of Citizens for Excellence in Education (CEE) warns the faithful. "Satan uses the evil in the occult New Age witchcraft lessons in our classrooms to divert our children's faith away from the true and living God toward the New Age god of 'Mother Earth,' while our schoolteachers and administrators are saying, 'Well, it's good environmental ecology.'"

An increased emphasis in the last decade on environmental education at the grade-school level has led a generation of children to question the nature of the society that has left them facing ozone holes, deforestation, global warming, and mass extinctions. This development is deeply threatening to various sectors of that society, especially resource-extraction industries, some Christian fundamentalists, and the extreme right wing.

The latter pretend to find in environmentalism the next big threat to the American Way of Life. Llewellyn Rockwell of the Ludwig von Mises Institute, for instance, calls it "an ideology as pitiless and messianic as Marxism." (It is "no coincidence," he says, that Earth Day occurs on Lenin's birthday.) Jonathan Adler of the Competitive Enterprise Institute, writing in the pages of the Heritage Foundation's *Policy Review*, finds a threat to today's children in such eco-fare as the Disney movie *FernGully* and cable television's *Captain Planet*. "Much of what is taught to children is simpleminded and inaccurate," he blusters, taking as an example the warning by the Teenage Mutant Ninja Turtles that "acid rain pollutes rivers and kills fish and trees." Adler believes that acid rain is actually helpful, and that dead, acid lakes in the Northeast have always been that way.

It is a short leap from such censoriousness to censorship. The most celebrated attempt to ban environmental material occurred in 1989, when local lumber interests tried to remove Dr. Seuss' *The Lorax* from the second-grade required-reading list in the Northern California timber town of Laytonville. The story of

Protecting young minds from infidels like Captain Planet . . . or even worse!

■ ■ ■

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the greedy Once-ler and his Super Axe-Hacker, who chop down the last of the Trufula Trees "at one smacker," cut too close to home for logging-equipment wholesaler Bill Bailey, who claimed that his eight-year-old son came home from school to announce, "Papa, we can't cut trees down. It's not good. You take houses away from the little animals." Complaining that *The Lorax* "criminalizes a very legitimate and needed industry," Bailey sought to have it removed from the reading list.

After a tumultuous public hearing, the Laytonville Axe-Hackers failed to banish *The Lorax*. Not all communities, however, are fortunate enough to draw the therapeutic light of tons of publicity and public attention. A conservative estimate puts the number of book-banning attempts last year at 348—and in four cases out of ten, the ideological cleansers succeeded in bullying schools into withdrawing educational material from the classroom.

In addition to the usual complaints about *Of Mice and Men* ("It should be burned up, put in a fire. It's not fit for a heathen to read") and *Damn Yankees!* ("Darn Yankees," please), an increasing number of challenges are being made solely on environmental grounds. The liberal lobbying group People for the American Way, which keeps track of such matters, includes the following incidents in its report on the 1991–92 school year:

- In Frederick, Maryland, the Concerned Women for America objected to "Impressions," a supplemental reading series for grades 1 through 4, on grounds of "negativism, being morally depressing, usurping parental authority, lacking literary value, and emphasizing the occult, witchcraft, and Satanism." The Women were Concerned in particular that a story called "The Spaceship Earth," which set global population at 4 billion, "will make children think the world is overpopulated." (The figure cited is actually outdated; the current total is 5.5 billion.)
- In Fort Wayne, Indiana, a parent objected to *The Cabbages Are Chasing the Rabbits* by Arnold Adoff, for allegedly instilling intolerance toward and prejudice against hunters.
- In Bend, Oregon, fundamentalist parents and the local timber industry joined to denounce "Earthkeepers," an optional environmental-science curriculum for children in grades 6 to 8. "One objector said an instructor hugging a tree may suggest 'Native American religion,'" reports People for the American Way; the lyrics "hello sun" and "hello moon" in one of the program's songs were said to be "indoctrinating children with 'New Age' religion," which the objector described as a "mixture of Hinduism, eastern mysticism, and witchcraft."

For its part, the timber industry complained that the course did not expose students to "all sides" of environmental issues. The school superintendent gave in and canceled the Earthkeepers program, at a cost to the district of $14,000.

- In Molalla, Oregon, 27 parents, community members, and timber-industry representatives objected to *Eli's Song* by Monte Killingsworth, in which a boy threatens to jump from a tree if loggers cut down a forest. "We are gravely concerned regarding the 'eco-mania' that is being pushed on our children in the classroom," they wrote to the school board. One would-be censor complained that the book portrayed his state in such a way that "when people come to Oregon they are going to expect to see rednecks and fools." The challenge failed.
- In the Tulsa, Oklahoma, suburb of Broken Arrow, the fundamentalist group Families Restoring Excellence in Education (FREE) called for a ban on *Earth Child*, an environmental-education resource guide for parents and teachers. Controversial parts of the book included an exercise in which children pretend to be trees; encouragement to "wonder and dream" at the night sky, sing "Twinkle, Twinkle, Little Star" and pick a personal star (a practice said to "promote Eastern Mysticism and other pantheistic religious philosophies and doctrines"); citation of "radical left-wing organizations" like Friends of the Earth, the Rainforest Action Network, the World Resources Institute, and Greenpeace; and a recounting of the Greek creation myth of Gaia, called by objectors a "blatant promotion of Paganism."

"*Earth Child* is basically worshipping the sun, worshipping the earth, the rain, the stars, the sky," charged Linda Montgomery of the Freedom of Truth Ministry on a radio call-in show. "This is basically pantheism. *Earth Child* is a religion." Would she also want to see the book removed from libraries and bookstores? "I'd like to see it burned, myself," Montgomery replied. As a result of the controversy, the Public Service Utility Company of Oklahoma, which had been providing *Earth Child* books and training workshops for teachers and childcare workers, dropped its sponsorship.

While the objections to *Earth Child* and other environmental texts may sound bizarre to nonbelievers, they are perfectly in keeping with fundamentalist thought—one school of which believes that saving the earth is the work of Satan, because the Bible says that the earth will perish in fire. Other fundamentalists see environmentalism as part of a sinister secret project by the United Nations and the Chamber of Commerce to implement one-world government. ("'One World' environmentalists believe in a one-world government with a one-world religion," opines Robert Simonds. "The Bible warns of this in the book of Revelation.") More basically, the religious right does not want children looking for answers in sources other than the Bible. "We must filter everything we hear through biblical truth," says Simonds. "So ask questions—find biblical answers."

Simonds' Citizens for Excellence in Education is the most vigorous book-banning organization in the country. The group is on record opposing any book in a classroom or school library that Simonds deems "anti-biblical," or that has any conceivable reference to the occult. "Conceivable," that is, to Simonds: CEE once challenged "Jack and Jill," claiming that Jill's tumble was

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actually a metaphor for a descent into Hell, Simonds' unabashed aim is to seize control of every school district in the country; even before last November's elections, his group claimed that 1,965 of its members had been elected to school boards. The number is impossible to verify, especially as CEE urges its members to deny their affiliation with the organization.

The last days, however, are not necessarily upon us. Textbook challenges succeed largely when they are concealed from public knowledge (the literal meaning, after all, of "occult"); in no case that has gone to court have the challengers prevailed over the First Amendment. "The advice we give parents," says Deanna Duby, deputy legal director of People for the American Way, "is that the censors can't succeed if people stand up and fight them."

—Paul Rauber

► For more information, see "Resources," p. 106.

It Ain't Necessarily So

The myth of jobs versus the environment.

As the Clinton administration sets its economic priorities, old ideas are making way for new. The former are embodied in Ronald Reagan's superficial but plausible hypothesis: if you burden industry with regulations, then profits, employment, and productivity will plummet. A nation must choose between environmental quality and prosperity. George Bush acted on the same impulse. When the economy faltered, he tried to buttress it by attacking federal mining, clean-air, endangered-species, and land-use regulations.

The facile old notions are not peculiar to presidents. When political scientist Stephen M. Meyer began to study the impact of environmental regulations last spring, he did not doubt that they hurt the economy—he just wanted to find out how much. The MIT scholar expected to find evidence of a "mildly negative relationship" between regulations and growth. But after rummaging through MIT 's library and calling the EPA, the Congressional Research Service, and even Bush's regulation-busting Council on Competitiveness, he came up empty-handed. There were no systematic studies to support "the environmental-impact hypothesis," merely anecdotal evidence. Its adherents had apparently taken it on faith.

His curiosity piqued, Meyer designed a study to measure, state-by-state, whether economies shrink as regulations proliferate. First he used a Conservation Foundation study to help rate laws, regulations, and per-capita expenditures on the environment in the 50 states. Seventeen of these emerged as "strong" environmental regulators and managers, including top-rated Minnesota, California, and New Jersey. Fifteen were "moderate"—rural Arkansas and industrialized Illinois among them. And 18 were "weak," including Texas, New Hampshire, and Idaho.

Meyer then examined each state's growth in economic output, productivity, and employment during the prosperous 1980s, a time when Reagan's "New Federalism" was handing responsibility for environmental quality to the states and vigilance varied widely. To Meyer's surprise, the states that had minimized the "burden" of regulations did worse than states that had hung tough. Growth in gross state product among the strong states was more than twice that of the weak. Construction jobs, an indicator of long-term economic prospects, grew by 53 percent in the strong states and declined by 1.4 percent in the weak. Only 2 of the 18 weak regulators had prospered.

Meyer also looked at different time periods, in one case comparing states' economic growth in the 1970s with that in the '80s to see if strong states experienced smaller gains over the two decades than those that heeded Rea-

gan's call to deregulate. Once again, the states with the toughest environmental policies showed the most growth.

Was some other factor skewing the results? For instance, could the sheer size of a state's economy mask the negative effects of environmental policies? To test this notion, Meyer eliminated the 25 richest states from his analysis. Still, every economic indicator suggested that there was either no relationship or a positive link between environmentalism and economic growth.

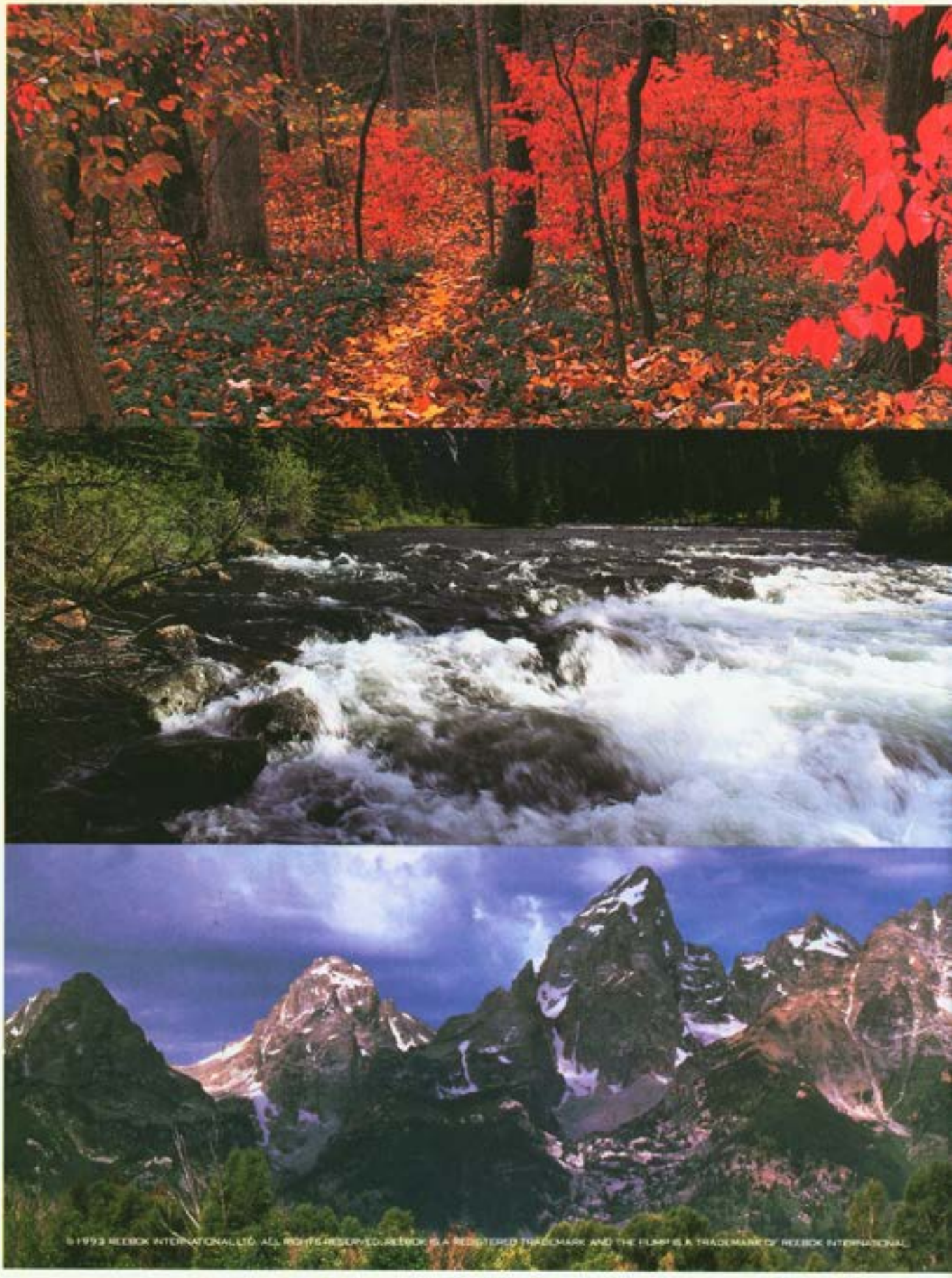
Though no parallel research had been published, all the scattered data Meyer found corroborated his results. A Bureau of Labor Statistics survey found that a piddling 0.1 percent of the job loss in the United States in 1988 was linked to environmental causes. Several studies in the late 1970s tried to simulate the economic consequences of tightening regulations. Some reported small positive effects and some small negative ones—but in no case did environmentalism prove to be more than a bit player on the economic stage.

"At a minimum," Meyer concluded, "the pursuit of environmental quality does not hinder economic growth and development." It may even foster it, he says, though his own data offer no definitive proof. He suspects that environmental controls may in some cases have a "Darwinian effect," weeding out weak industries and promoting more aggressive, innovative ones. (One firm that has thought unconventionally for a long time, Minneapolis-based 3M, boasts that its efforts to prevent pollution during the past 20 years have saved it $670 million.) Or perhaps enlightened social and environmental policies attract businesses by producing a better-educated workforce and a higher quality of life. As one CEO headed to environmentally vigilant Vermont told Meyer, "My company moved to where I wanted to live. And I wanted to live in a place that was nice."

In any case, the environmental factor is small compared with the others that affect growth. California, for example, has been mired in a recession for the past two years. But the downturn has had little to do with the state's strong environmental stance, Meyer contends, and a lot to do with its dependence on disappearing defense contracts. "None of the people at Lockheed would have kept their jobs if California had had looser pollution controls," he says.

While they don't cause large-scale decline, environmental regulations aren't painless either. "Specific environmental regulations can and do have transient effects on certain industries, communities, and occupations," Meyer says. (Anybody who cuts timber, builds dams, or mines coal knows that.) "But these effects are limited in scope and duration, and few in number." Meyer sees these problems as ripe for study, and urges policymakers to find ways to minimize local hardship. But at the state and national level such dislocations are imperceptible.

"People are screaming back and forth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about the nation's economy and its environment without ever bothering to find out whether there's a conflict," Meyer says. "They don't need to fear the tradeoff, because it doesn't exist."

—Joan Hamilton

▸ *For more information, see "Resources," p. 106.*

Putting Pork Out to Pasture

Steering federal funds from roads to transit.

Every so often a supermarket will hold a shopping contest. The contestants have five minutes to load their carts with as much stuff as they can carry, and the fastest, greediest shopper wins. Bill Clinton's campaign promise to put people back to work and jumpstart the economy by spending $20 billion a year on infrastructure has generated a similar frenzy among the nation's highway-building interests. They've been making out their grocery lists and, as always, their favorite item is pork.

When it comes to spending massive amounts of money, highway advocates are primed to be first out of the starting gate. Many state transportation departments have a backlog of projects, and because these departments have long interpreted "transportation" to mean "cars," and "infrastructure" to mean "highways," the plans they're pulling off the shelves are for roads and bridges, not for projects that leave the environment relatively intact, such as rail lines and buses. The American Association of State Highway and Transportation Officials, the organization representing state transportation departments, told the Clinton transition team that its members could use $22.8 billion over the next four years to fund their contribution to the job-creation effort. Most of that money would build new highways and bridges; the rest would be used to repair and rehabilitate those we already have.

Where freeways go, malls and subdivisions are sure to follow, so the idea of pumping billions of dollars into sprawl-spawning highways makes environmentalists queasy. Spanking-new freeways have an almost magical ability to lure drivers onto the road, negating any hoped-for congestion-clearing benefit. A prime example is the $1.7-billion Interstate 90 bridge linking Seattle with suburbs east of Lake Washington. When it opened two years ago, state transportation mavens predicted the bridge would be able to absorb 10 to 20 years of regional growth. The new bridge was at capacity one week later.

Expanding the highway system also undermines the efforts of environmentalists laboring to combat air pollution. "Building a bunch of highways just guarantees that much of the work we've put into the Clean Air Act would leave us treading water," says Sierra Club Washington lobbyist Dan Becker.

Transit advocates eager to prevent further Seattle-style boondoggles won a victory with the December 1991 passage of the Intermodal Surface Transportation Efficiency Act. The bill broke the stranglehold that roadbuilding interests have long held on federal transportation dollars by making it easier for states to spend their allotments ($155 billion worth) on public transit, bike paths, and pedestrian walkways. By giving the states more flexibility, the bill effectively shifted the battle over transportation money from congressional backrooms to the state and local level, where environmentalists and transit activists sometimes have a better chance of being heard.

The 1991 transportation bill is likely to be a conduit for at least some of the money allocated under Clinton's infrastructure plan. Last year, Congress trimmed the law's funding for fiscal year 1993 by about $3.9 billion (from an original $25.7 billion), leaving both transit and highways short of cash. Clinton will probably reinstate that money, perhaps with whipped cream on top. The danger is that the funds will be carjacked by state-level high-

waymen. Although the bill's planning and public-participation requirements make it harder for transportation departments to mindlessly churn out new expressways, there are still no guarantees. "It's certainly not a done deal," says Preston Schiller of the Sierra Club's Urban Environment Committee. "There are some regions that will probably get into more pork than you can imagine as a result of this."

The nation's transit agencies, whose federal funds were halved during the Reagan-Bush years, also want a seat on the bus. They have asked the Clinton administration for $7.2 billion for FY93, most of which would be used to replace decrepit, smog-belching buses with ones that are more fuel-efficient. Almost a quarter of the buses now on the street are past retirement age.

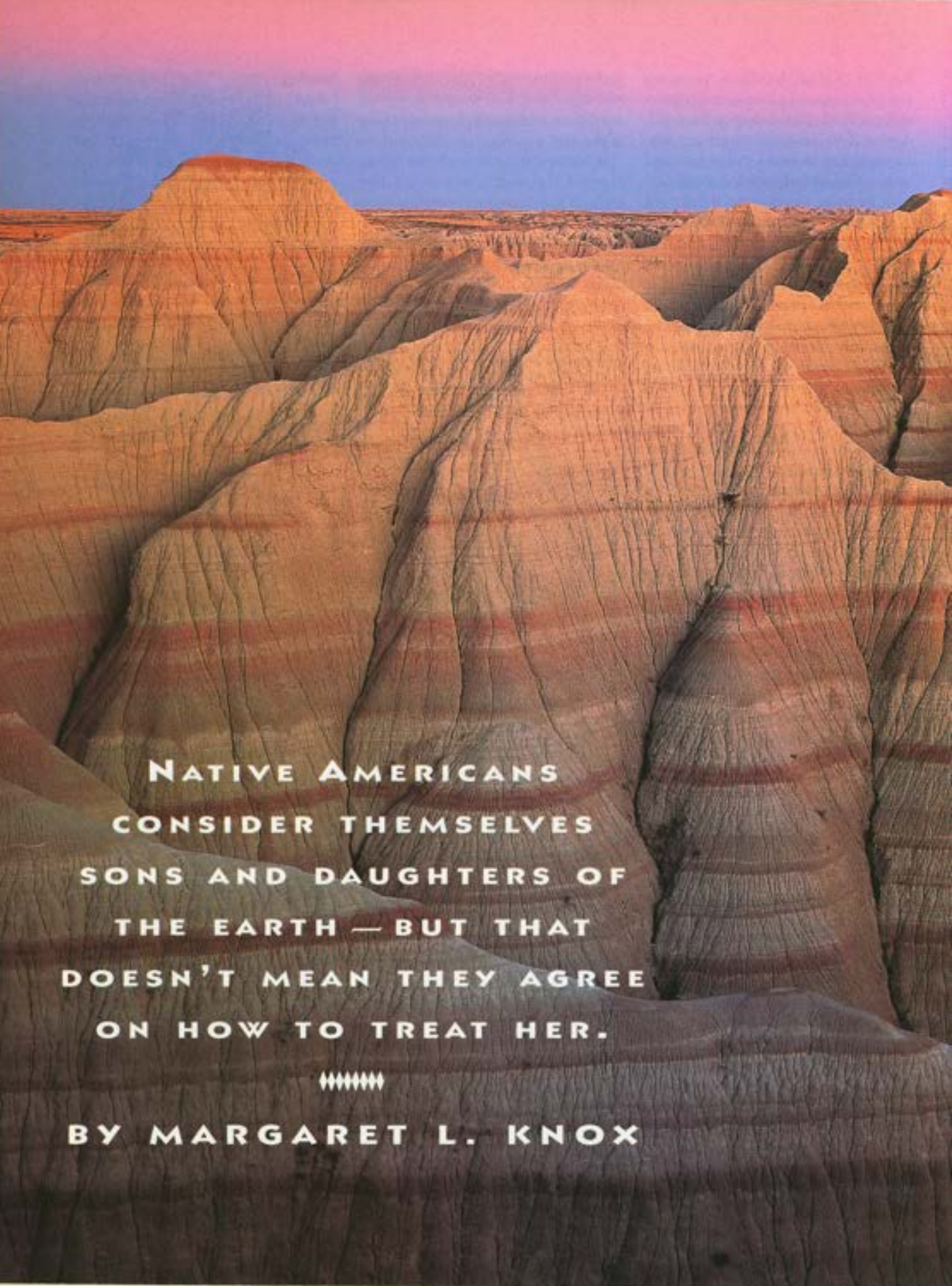
While transit has starved, highways have been comparatively well fed, enjoying about eight times more funding. Even so the nation's roads and bridges are deteriorating: the Department of Transportation estimates that it will cost $45.7 billion a year for the next 20 years just to keep them from getting worse. Environmentalists argue that state transportation departments shouldn't be allowed any new toys until they've taken care of the ones they already have, and they would like to see new highway spending restricted to repair and rehabilitation. Sprucing up old freeways isn't nearly as much fun as building brand-new ones, but it employs roughly the same number of people.

Infrastructure doesn't have to mean highways; rehabilitating the environment may be the most effective job-producer of all. The Sierra Club is among the organizations urging President Clinton to invest in repair of the nation's natural infrastructure, which is even more threadbare than its man-made counterpart. Money spent cleaning up polluted urban waterways or restoring sediment-clogged salmon habitat would put a third more people to work than the same amount invested in highway construction. At the same time, it would underscore the Clinton-Gore campaign theme that jobs versus the environment is a false dichotomy, and signal that a reckless attitude toward the environment is really a thing of the past.

If money for new transportation projects does end up as part of Clinton's package, environmentalists have proposed that states be asked to prove that the money they spend actually reduces the amount people drive. The more successful a state is in getting people out of their cars, the more money it would receive in the next funding cycle. This requirement "would strongly discourage the states and their congressmen from spending money on white-elephant projects, because the consequence would be less money in subsequent years," explains Bill Roberts, legislative director of the Environmental Defense Fund. In other words, pigging out on pork this year could earn the states an empty shopping basket next time around.

—Dashka Slater

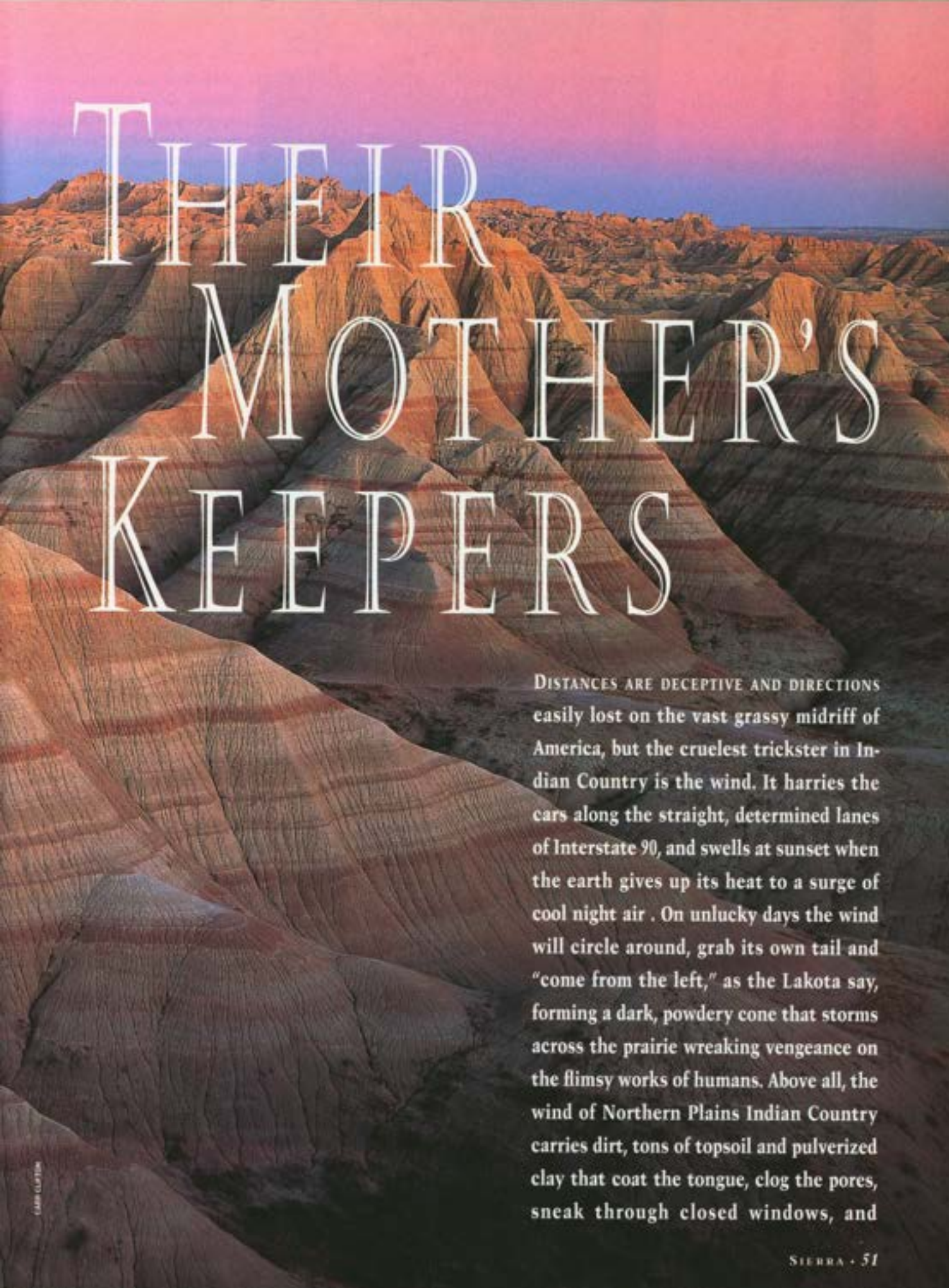
► For more information, see "Resources," p. 106.



NATIVE AMERICANS CONSIDER THEMSELVES SONS AND DAUGHTERS OF THE EARTH — BUT THAT DOESN'T MEAN THEY AGREE ON HOW TO TREAT HER.

BY MARGARET L. KNOX

Their Mother's Keepers



Distances are deceptive and directions easily lost on the vast grassy midriff of America, but the cruelest trickster in Indian Country is the wind. It harries the cars along the straight, determined lanes of Interstate 90, and swells at sunset when the earth gives up its heat to a surge of cool night air . On unlucky days the wind will circle around, grab its own tail and "come from the left," as the Lakota say, forming a dark, powdery cone that storms across the prairie wreaking vengeance on the flimsy works of humans. Above all, the wind of Northern Plains Indian Country carries dirt, tons of topsoil and pulverized clay that coat the tongue, clog the pores, sneak through closed windows, and

make rivers run muddy.

Which is one reason Bill Koenen hates the idea of strip-mining the badlands of the Pine Ridge Reservation in southwestern South Dakota—home to the Oglala, one of the many tribes calling themselves Lakota. (The French called them Sioux.) Koenen, a great disheveled bear of a man who looks something like Oliver Hardy with a ponytail, rummages through his desk and mutters furiously. "We have 80-mile-an-hour winds—if they mine in Wanblee, we'll breathe the dust here." The wind, as though participating in the conversation, rattles Koenen's weathered mobile home in Porcupine, 30 miles southwest of Wanblee. He goes on rooting through his desk—bringing up a few random pages of a lawsuit here, the appendix of a study there—while keeping up a continuous monologue about nefarious vaccination experiments, unlicensed pesticide sprayings, B-1 bomber flyovers, and other crimes against the Oglala Lakota nation.

UNEMPLOYMENT, DISEASE, INFANT MORTALITY, AND EARLY DEATH IN INDIAN COUNTRY ARE ON A SCALE MORE SIMILAR TO UGANDA THAN THE UNITED STATES.

The mining project whose fluttering documents fill Koenen's arms this breezy summer morning is only one in a ceaseless procession of dubious development proposals and get-rich-quick schemes inflicted on the tribe year in and year out. Millions of dollars are at stake here; some of the country's biggest companies—as well as agencies of the federal government—are itching to do business on the reservations. But for the moment, at least, the Pine Ridge mining project is stalled. Mobil Oil, Union Carbide, or whichever other companies stand to profit from the strip-mine (the identities of the actual bidders are secret) are paralyzed on Pine Ridge, thanks largely to this massively disorganized office with one phone line, one photocopier, and one very overworked coffeemaker. Koenen, a Chippewa, and Emily Iron Cloud, his Lakota wife, run the Native Resource Coalition in their spare time out of this trailer next to their own mobile home. This is Native American environmentalism.

The nation's 287 Indian reservations, from Florida to Arizona to Alaska, are among the most exploited and environmentally degraded lands anywhere in rural America. With the blessing of the federal Bureau of Indian Affairs (BIA), corporations and federal agencies have wheedled, enticed, pressured, and bribed their way in—to strip-mine coal, as on the Crow and Navajo reservations; to drill for oil, as on the Blackfeet Reservation; to site garbage dumps and medical-waste incinerators, as on the Salt River and Gila River reservations. The list is depressingly long.

But the bad guys don't always win, and lately it seems as though they're winning less and less. While activists like Koenen might strike the newcomer as distracted, disorganized, and laughably underfunded, they can still be stunningly effective. Their files may be incomplete, and they may not be able to quote the Resource Conservation and Recovery Act chapter and verse, but their traditions and culture give them a power their environmentalist colleagues in Washington or San Francisco might envy.

Bill Koenen and Emily Iron Cloud with a sample of zeolite. Using a mixture of politics and spirituality, they are fighting a proposal to strip-mine the mineral from the Pine Ridge badlands.

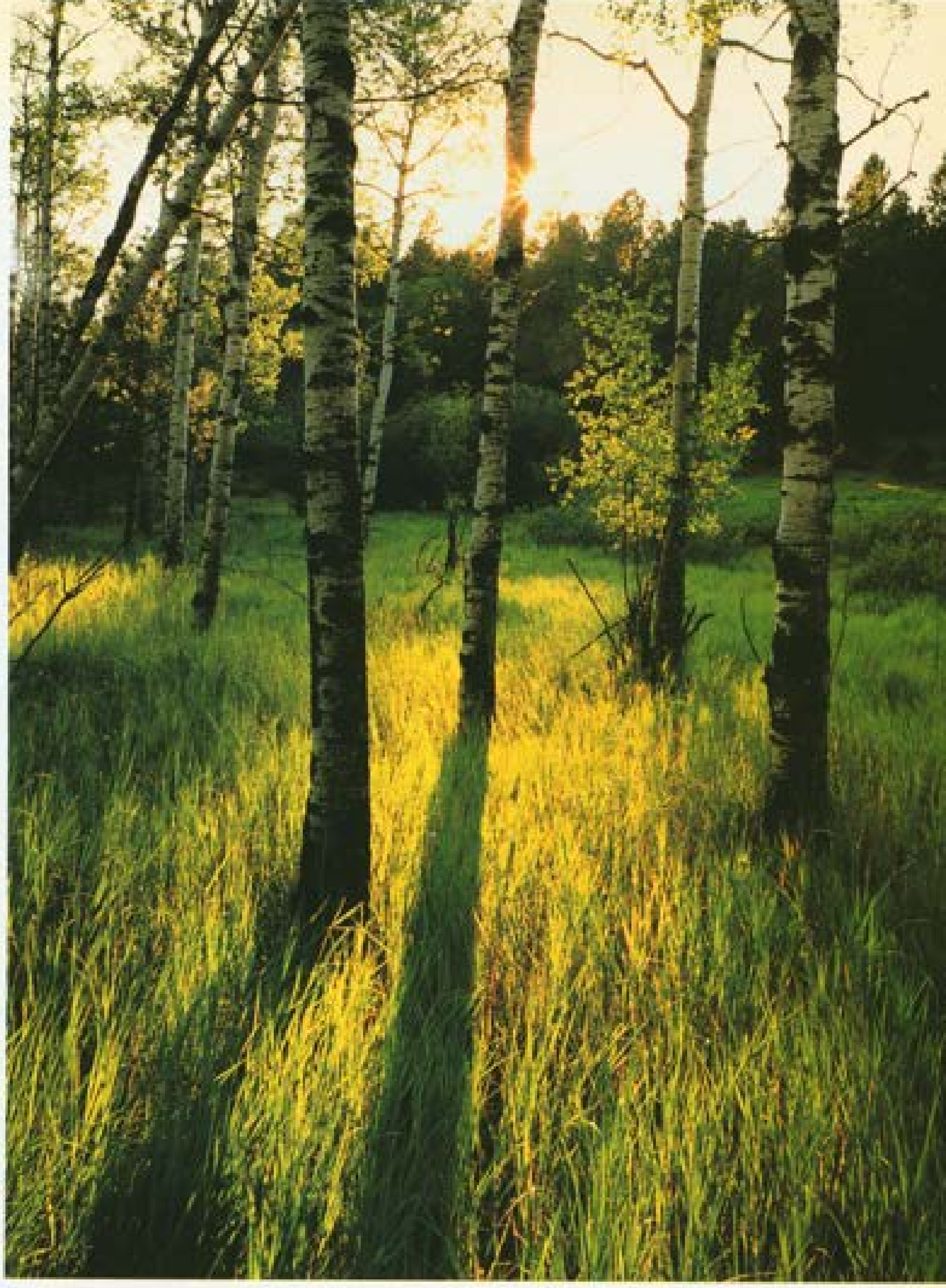
The sources of this strength are the earth and sky; Native Americans tend to consider themselves inseparable from the natural elements of their land. ("Your environmental movement is just white people beginning to put down roots on this continent," Curley Bear Wagner, cultural officer for the Blackfeet people in Montana once told me. "It's about time.") Given sufficient resources, Indian activists can play the game of environmental impact statements and scoping reports, but they can also touch and

move even the most development-minded of their brothers and sisters by talking respect for their mother, the earth. Just as the rhythm of reservation life is different from that of the larger society (partly owing to the remarkable shortage of telephones in Indian Country, which slows everything to a pleasant crawl), so is the rhythm of politics. Much of what mainstream environmentalists hold vital to their own battles—all the habitat maps and groundwater charts and computerized data—plays only an incidental role in reservation environmental politics. Indians speak otherwise, in terms outsiders would call religious, although they themselves say it isn't a question of religion as much as a question of "the way." Either you know all life to be sacred and intertwined, or you don't.

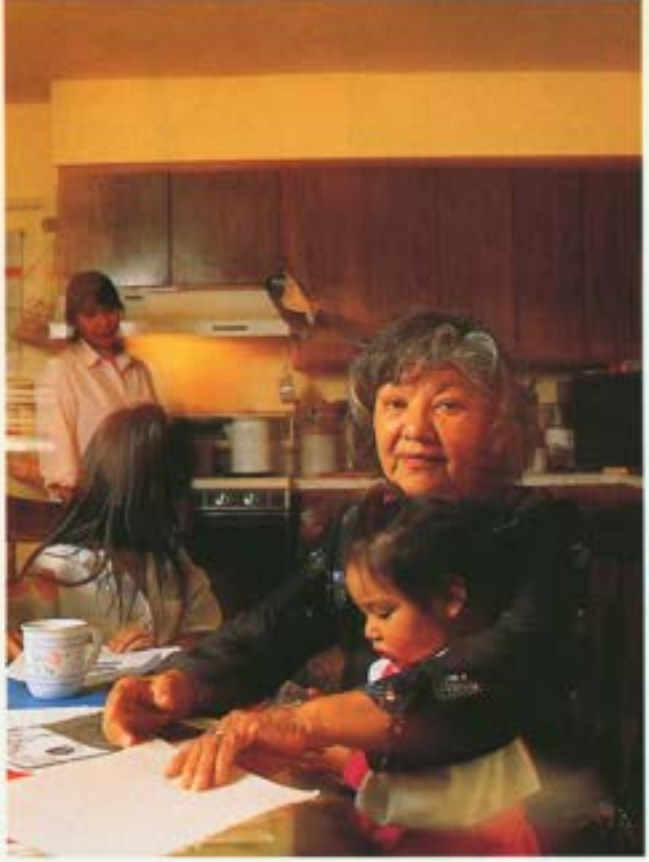
At their core, most Indians do—even pro-development suit-and-tie Indians with short hair and fancy cars with government plates. Environmental concerns can be absolutely crucial within the context of reservation politics; even before the most hostile of tribal councils, the kind of "Mother Earth" talk that would make Anglo mining executives or legislators roll their eyes can make all the difference.

"There's a growing respect for the elders and the old ways," says Koenen, who himself is a member of the traditionalist Native American Church. "You can't accomplish much by ignoring them."

Gerald Clifford is an Oglala Lakota who leads his tribe's struggle to regain possession of the Black Hills, which, although badly strip-mined and clearcut since Sitting Bull and Crazy Horse fought for and lost them, remain the Lakota's preeminent sacred site. Despite their desperate financial needs, the Lakota are refusing a $300-million cash



An aspen grove in the Black Hills of South Dakota, an area the Lakota consider sacred and miners and loggers consider lucrative. Gerald Clifford (right) is leading his people's efforts to recover the land from the federal government.



From her kitchen-table headquarters, Lena Bravo fought off a proposed uranium mine on Hualapai land at the Grand Canyon.

settlement from the government to relinquish their claim to the region. "In Indian Country you can talk all this dumbfounding talk about money," says Clifford, who wears Oxford-cloth shirts, an earring, and the distinguished air of a college professor. "But then someone brings up that you're Lakota and the earth is sacred, and that ends the meeting."

That sense of sanctity is not confined to South Dakota or the Great Plains. From coast to coast, Indian activists are rekindling a passion for the land and a wariness of those who would scar it for profit.

Lena Bravo, a Hualapai elder in Arizona who founded an environmental group called Hualapais for a Better Tomorrow, says her tribe's 1991 defeat of a uranium strip-mine at the lip of the Grand Canyon depended more on the Great Spirit than on legal maneuverings. "We believe our Mother Earth is sacred, and we realized this was a question of tearing up our Mother Earth," she told me one sweltering June morning. Bravo spoke between bites of thick pancakes, while two daughters gossiped over dishes in the open kitchen behind her and a series of grandchildren clung to the back of her chair, demanding minor attentions. What she calls her "headquarters" is a far cry from the computer-filled offices of the Sierra Club or Audubon Society, but from her ample kitchen table, the diminutive grandmother launched the movement that, by talking spirit as well as science, booted out Energy Fuels Nuclear, the multimillion-dollar Denver-based mining company. It also ousted the pro-mining tribal council chairman, tilted the balance on the council toward environmental sensitivity, and amended the Hualapai tribal constitution to require a referendum of all members on any proposed development worth more than $50,000.

"We had to do some tall talking," Bravo says. "We had to prove to the people that the council was theirs, not the other way around."

THE VULNERABILITY OF INDIAN LAND TO THE worst kinds of development is a tragedy in three Acts. The Indian Appropriation Act of 1871 withdrew recognition of the tribes as independent sovereign nations; on its heels came the General Allotment Act of 1877, which broke up the Indian communal lands and gave most of them over to homesteaders. (Its author, Senator Henry L. Dawes of Massachusetts, scorned Indian "communism" and lauded "selfishness" as the anchor of civilization.) Finally, the Indian Reorganization Act of 1934 forcibly replaced traditional, consensual forms of tribal government with constitutions and councils overseen by the Bureau of Indian Affairs.

Native America was left semi-autonomous, but with neither the power nor the resources to exercise its sovereignty. Indian reservations, for example, were exempted from the jurisdiction of state laws—including environmental laws—but were then denied any independent means of protecting themselves. When the environmental laws of the 1960s and '70s swept the rest of the nation, they left Indian lands wide open to polluters. Indian Country was overlooked in the original versions of the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, the Solid Waste Disposal Act, the Resource Conservation and Recovery Act, even Superfund. Those oversights are now being corrected, but most tribes, starved of the federal dollars that states were given to meet the new standards, still don't have an environmental office, much less comprehensive regulations for such an office to enforce.

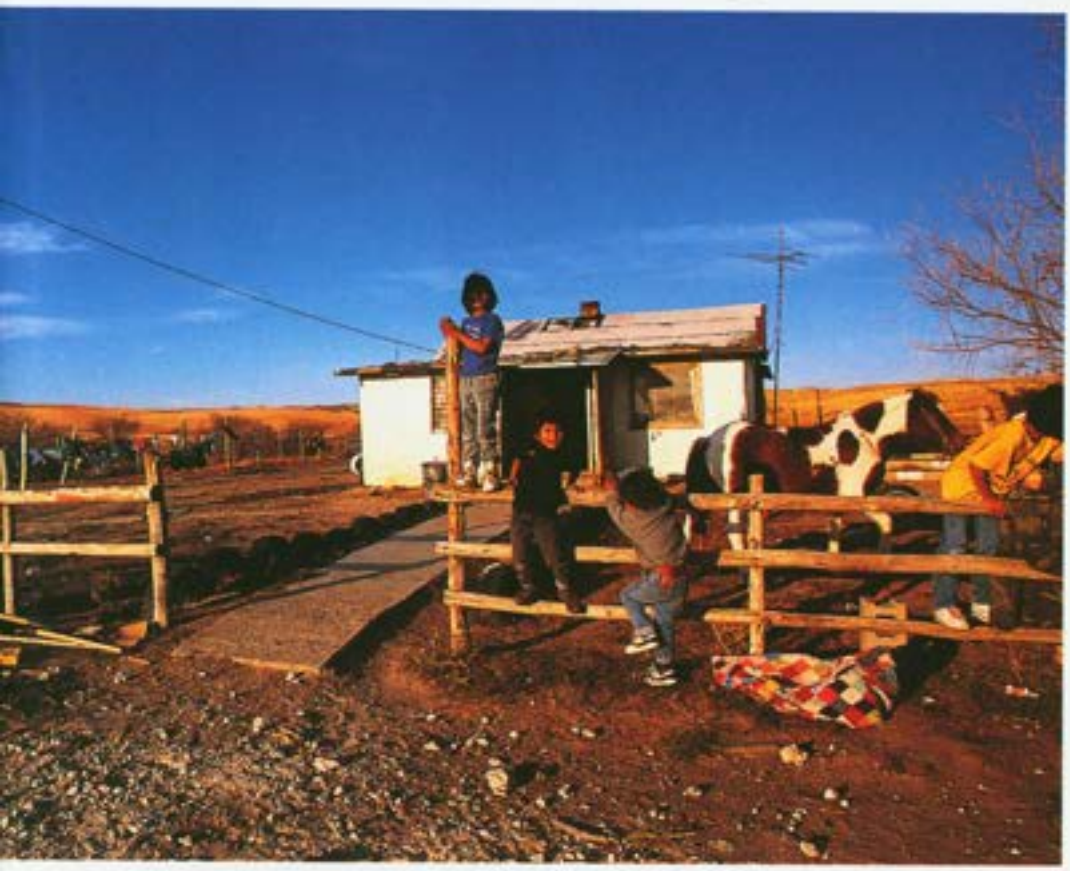
"YOUR ENVIRONMENTAL MOVEMENT IS JUST WHITE PEOPLE BEGINNING TO PUT DOWN ROOTS ON THIS CONTINENT. IT'S ABOUT TIME."

The Indigenous Environmental Network, working out of the Native Resource Coalition office in Porcupine, South Dakota, is trying to fill the regulatory gap, drafting model tribal codes that both reflect traditional attitudes and exceed federal standards. "Whether we're a small tribe or a large tribe, we can't give up this control to

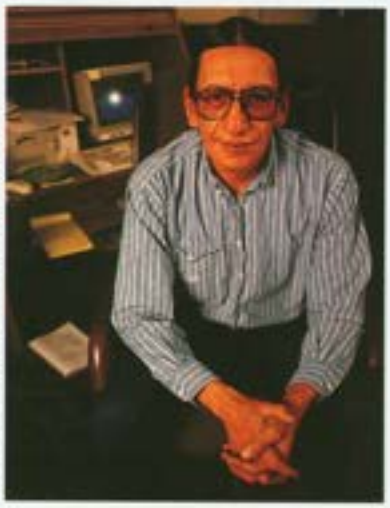
another government program," says Tom Goldtooth, environmental coordinator for the Red Lake Chippewa in Minnesota and a network activist. "We don't want our environmental codes just to mimic the dominant society." Until those codes are developed, however, reservations remain a tempting target for the nation's polluters.

The susceptibility of Native America to environmental depredation is heightened by its extreme poverty. Unemployment, disease, infant mortality, and early death in Indian Country are on a scale more similar to Uganda than the United States. Pine Ridge encompasses what has been for years one of the two poorest counties in the nation—poorer than Appalachia, poorer than South Central Los Angeles. "We have children who fall asleep in class because they're not getting enough to eat," says Randy Plume, who recently returned to his native Pine Ridge as commissioner of education. "We have kids coming to school dirty, with open sores, because there's not enough water to wash with."

Plume is by no means what Indians call an "apple"—red on the outside and white on the inside. For instance, he recently led the Oglala Lakota in convincing Congress to ban the Crazy Horse beer label, which the tribe considered a grave insult to their ancestor. But Plume still often sides against Bill Koenen in environmental disputes; he is more willing than Koenen to accept certain white ways in the name of fighting poverty.



Donavan Shangreaux is another one of Koenen's sometime adversaries. The first I saw of him was a brightly patterned shirt, a waist-length ponytail, and a hawklike profile glaring at a computer screen. Inviting me into his office, he extended his left hand. His right arm ends in a hook, a souvenir of Vietnam. As the tribal council's director for mining projects, Shangreaux has been shepherding Koenen's nightmare—the biggest mining project ever to confront the Lakota—through the rugged terrain of tribal politics.



ABOVE: ALLEN RUSSELL / PROFILES WEST RIGHT: STEVE FISCHBACH

Pine Ridge is a piece of the Third World in the middle of the United States, with 85 percent unemployment and high rates of alcoholism and infant mortality. If he had to choose, education commissioner Randy Plume (left) would rather see dirty jobs than undernourished kids.

Along the southern flank of the milky White River, beneath the scanty topsoil of marginal badlands, lies a 40-mile-long band of zeolite. The value of this porous clay, depending on market conditions, could exceed $20 million a year. Ironically, zeolite's value to the outside world is nominally environmental: it's used to filter effluent at poultry farms or nuclear-power plants. To strip-mine it here would mean scraping the meager topsoil from the butte tops and flattening the eerie white spires themselves, raising what Koenen and the Native Resource Coalition fear would be a cancer-causing dust to be spread by the ever-restless wind. Although ecologists from nearby Rapid City agree with Koenen that post-mining "reclamation" would be a joke, Shangreaux, a University of South Dakota MBA, calls their concerns "alarmist."

"It's about job creation, social development," he says, "which we obviously need to get off the dole." Above his

Badlands National Park, South Dakota,
near the Pine Ridge Indian Reservation.

desk hangs a poster declaring: "Grandmother Earth! We are relatives of the two-leggeds and the four-leggeds and the wingeds of the air," and I ask him how he reconciles that sentiment with zeolite mining. He shrugs, mumbles something about compromise, and allows that "this project would not be my first priority." His biggest concern, he says, is that the big mining companies will scoop up the profits along with the zeolite, and that the tribe will have nothing to show for it but a hole in the ground.

INDIANS' REVERENCE FOR NATURE AND "TIMELESS WISDOM," THE GOVERNMENT BELIEVES, MAKES THEM IDEAL CUSTODIANS OF SPENT FUEL RODS.

There is, in fact, a pervasive lack of faith on many reservations that average Indians will benefit from the development of their land. Many projects come and go, all accompanied by big promises, but few Indians have gotten richer from them. That history is a powerful argument for Indian environmentalists. The reasoning goes like this: not only is the project in question ecologically disastrous, but everyone knows we won't ever see a dime from it.

Intense pressure to mine began during the energy crises of the 1970s, when a country hungry for domestic sources of oil and gas set out to discover what lay beneath the Indian reservations. The Interior Department funded mineral-exploration activities on at least 30 reservations—everything from rock sampling to environmental impact statements and the drafting of tribal mining codes. Preparations that would have cost a private zeolite company half a million dollars, in other words, were paid for by the government. The result is that the companies have been banging down the door at Pine Ridge. You can call that good fortune, or, like Bill Koenen, you can call it predation.

The zeolite issue exploded when Koenen discovered BIA-funded engineers taking truckload-size "samples" of the valuable mineral from a remote badlands canyon by night. The Native Resource Coalition promptly made camp, erected tepees, and invited the media. Residents of the nearby hamlet of Wanblee came too, and voted in a nonbinding referendum against any further mining. No one was ever prosecuted for mining without a permit, and the scale of the "sampling" is still a matter of dispute, but the tribal council put the project on hold for the time being, some members citing Mother Earth, some poor market conditions for zeolite.

Pine Ridge BIA Superintendent Delbert Brewer considers the tribe irresponsible for stalling the bulldozers and dumptrucks. Another homegrown Oglala Lakota, Brewer spent most of his adult life in the white man's world and came back shorn of both his braid and his willingness to ignore the tribe's economic distress for the sake of Mother Earth. "Zeolite was the most promising thing they had going," says Brewer, whose outer office is jammed every day with tribal members seeking help for everything from a new house to dental work. "They've been remiss in not getting companies in here."

Ellen Long Turkey Wright is opposing the Lower Brule reservation's application to store garbage for Chicago and nuclear wastes for the government.

OPPOSITE PAGE: LARRY ULRICH RIGHT: STEVE FOLTZBACH

ON THE RESERVATIONS, YOU CAN'T TALK LONG about logging or salmon runs or radiation sickness without running into the issue of sovereignty. For non-Indians it is one of the hardest notions to sort out, while for Indians the linkage is obvious and unavoidable. To Native Americans, sovereignty is the Emancipation Proclamation and the Bill of Rights rolled into one, the wellspring of their political will and the ultimate weapon of resistance, harking back to the days when the tribes had the strength and stature of truly independent nations making treaties with governments in Washington, D.C., and Ottawa. (The *Handbook of Federal Indian Law* still refers to "inherent powers" that have "never been extinguished.") The youngest members of any tribe know the date of their people's treaty the way other Americans know 1492 and 1776. And nothing angers reservation activists more than affronts to their tribe's sovereignty.

But the law also calls Indian sovereignty "limited," in the same way that of the states is limited. Too often, critics say, the federal government ignores Indian sovereignty when it

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Traditional psychiatry regards consciousness as an accident of nature, doomed—like life itself—by the entropic destiny of the physical universe. But the Gaia hypothesis, which views the biosphere as a self-regulating, essentially eternal mechanism, may point the way to an ecological conception of sanity.

BY THEODORE ROSZAK

BEYOND THE REALITY PRINCIPLE

In one of his late, speculative essays, *Beyond the Pleasure Principle*, Sigmund Freud asked as ambitious a question as any psychiatrist can raise: what is the place of the psyche in the universe? His answer was wholly despairing. For Freud, the doctrinaire materialist, life and mind were freakish events in an infinite and unfeeling cosmos subject to the tyrannical rule of entropy. "The attributes of life," said Freud, "were at some time evoked in inanimate matter by the action of a force of whose nature we can form no conception. . . . The tension which then arose in what had hitherto been an inanimate substance endeavored to cancel itself out. In this way the first instinct came into being: the instinct to return to the inanimate state."

In Freud's time, the newly discovered second law of thermodynamics had attained cult status as the final answer to the riddle of the universe. For many *fin de siècle* intellectuals, entropic doom became irrefutable proof of the futility of life. Human consciousness was a transient, unaccountable accident destined for annihilation; ultimately, every chemical process in the universe would succumb to the great and final "heat death" and return to its "naturally" lifeless condition. After that, for all eternity, there would be nothing at all except the measureless waste of space sparsely littered with the wandering cinders of long-expired stars. Firmly under the spell of the inexorable second law, Freud could see no better destiny for life than merciful extinction. A "death instinct" lay at the foundations of the psyche, summoning consciousness back to the tranquility of "the inanimate state." "Nature," Freud was convinced, "is eternally

ILLUSTRATIONS BY BRIAN AJHAR

remote. She destroys us—coldly, cruelly, relentlessly."

Freud's bleak vision of nature continues to haunt mainstream psychiatric thought. It is a sort of negative presence, unmentioned but always in the background: the image of a hostile cosmos that has no congenial relationship to human consciousness. Modern psychiatry's decision to ignore the natural environment and minister to the psyche entirely within a personal or social frame of reference derives in large measure from the cosmological paradigm it inherits from Freud.

Of course, Freud's psychiatric authority is not what it used to be: there is very little in his work that has not been vigorously challenged, if not savagely attacked, over the past century. But few modern therapists would question the definition of sanity offered in this passage from *Civilization and Its Discontents*, one of his most famous essays:

> Normally, there is nothing of which we are more certain than the feeling of our self, of our own ego. This ego appears as something autonomous and unitary, marked off distinctly from everything else. . . . An infant at the breast does not as yet distinguish his ego from the external world as the source of the sensations flowing in upon him. . . . One comes to learn a procedure by which, through a deliberate direction of one's sensory activities and through suitable muscular action, one can differentiate between what is internal—what belongs to the ego—and what is external—what emanates from the outer world. In this way one takes the first step towards the introduction of the reality principle which is to dominate future development.

While none of us could get through the day without making some common-sense discrimination between the world Out There and the world In Here, Freud reached his conclusions along lines that have had profound consequences for psychiatric theory. His context here is a discussion of the "oceanic feeling." This is the name he gave to the infant's sense that it and the world flow together in a single, unbounded identity. Freud believed that, while this quasi-mystical experience of union with the external world is appropriate for the baby in its mother's arms, it is neurotic if it survives into adult life. Where does madness begin? For Freud, it was with any mental state in which "the boundary line between the ego and the external world becomes uncertain or in which it is drawn incorrectly." He could never have guessed that a day would come when this seemingly obvious distinction between the self and the world would be viewed as a serious environmental issue by a new breed of ecologically concerned psychologist.

ECOPSYCHOLOGY COMMITS ITSELF TO UNDERSTANDING PEOPLE AS ACTORS ON A PLANETARY STAGE WHO SHAPE AND ARE SHAPED BY THE BIOSPHERIC SYSTEM.

IN ESTABLISHING THE BOUNDARY between self and not-self, Freud used a loaded phrase: the "reality principle." The sane are in touch with reality, the crazy are not. The principle commands less respect now than it did in Freud's day. Confabulating with madness became a favorite psychedelic sport of the 1960s; the main purpose of every "acid test" was to expand consciousness in ways that blurred all the official boundaries. But some who have questioned Freud's reality principle since then have had more than fun and games in mind. In his groundbreaking book *Nature and Madness* (1982), environmental philosopher Paul Shepard suggested that Freud's rule-of-thumb dichotomy between the objective and the subjective may actually be one of the deep roots of our ecological crisis. Far from being the basis for sanity, it may represent a psychic trauma that has distorted the more balanced relationship between human beings and their natural habitat that Shepard believes existed in pre-civilized times. Our increasing objectification of nature, he argues, may be a liability of civilization that has deepened with every technological development since the invention of agriculture.

It might be too much to expect psychotherapists to pay attention to the ideas of an outsider like Shepard, but his attempt to ecologize psychology has been echoed within the profession itself by as renowned a figure as Jungian analyst James Hillman. Also writing in the early 1980s, Hillman conjectured that the environmental degradation we see around us in the external world might be studied by psychiatrists in much the same way that they examine disturbed dreams or sexual fantasies—as projections of psychopathic symptoms. He urged that "asbestos and food additives, acid rain and tampons, insecticides and pharmaceuticals, car exhausts and sweeteners, televisions and ions" be brought within the province of therapeutic analysis: "Psychology always advances its consciousness by means of pathologized revelations, through the underworld of our anxiety. Our ecological fears announce that *things* are where the soul now claims psychological attention."

But old orthodoxies die hard. In a recent interview with John O'Neil, president of the California School of Professional Psychology, I asked what part our relations with the natural environment play in mainstream psychiatric training and practice. "That's an easy one," O'Neil answered. "None." His assessment is borne out by the latest edition of the *Diagnostic and Statistical Manual*. The *DSM* is the American Psychiatric Association's official listing of every recognized mental illness. As the canonical authority for all legal, forensic, and

insurance uses of psychology, it serves as a convenient baseline for the discussion of sanity and madness as they are understood by the most respected authorities in our society. Though we live in a world haunted by the prospect of environmental calamity, the *DSM* makes only one reference to the nonhuman world—a listing for the neurosis called "zoophilia," having sex with animals.

Troubled by the environmental disconnection of their profession, a number of adventurous psychologists are at last seeking to create ecologically relevant forms of therapy. Their motivation is as much a matter of conscience as of theoretical curiosity. Just as lawyers have been drawn to environmental law, and teachers have introduced environmental curricula into our schools, so psychologists are (however belatedly) responding to the influence of the environmental movement. "Ecopsychology" is the name most often used for this growing body of theory and practice, but others have been suggested: psycho-ecology, eco-therapy, global therapy, green therapy, earth-centered therapy, re-earthing . . . . The neologisms are no more euphonious than the term "psychoanalysis" was when first proposed, but by whatever name, the goal is the same: to expand the framework of psychiatric thought to include the natural environment. The history of psychiatry might be told as just such an ongoing effort to broaden the context of analysis: from the individual to the family to the workplace to the society and culture at large. Each of these extensions has brought with it new insights for diagnosis and treatment; each has also deepened the public's understanding of human nature. Ecopsychologists believe that the time has come to define sanity within a biospheric context.

The parallel with family therapy is instructive. During the 1960s a growing number of psychologists came to realize that there were sources of anxiety and forms of neurotic behavior that could be treated only if the entire family were brought into analysis. Some, like Scottish psychiatrist R. D. Laing, went so far as to indict the family as the main crazy-making institution in our lives. Similarly, ecopsychologists suspect that there are forms of neurosis, perhaps including the most emotionally corrosive kind, that trace back to our entrenched alienation from the natural environment. The crowded industrial city, with its killing pace and compulsive habits of consumption, may disseminate an "urban madness" that exacts a heavy toll upon both the person and the planet. Is it possible, then, that every nature poet since Wordsworth has been right in telling us our sanity depends upon access to wilderness and natural wonders, upon the companionship of trees and beasts, and above all upon the reverence we experience in the presence of the inhumanly magnificent? If so, then healing the wounded psyche may require that we find ways to "prescribe nature."

Seeking to do just that, a conference titled "Psychology as if the Whole World Mattered" was held in 1990 at the Harvard-based Center for Psychology and Social Change. There a gathering of ecopsychologists concluded that "if the self is expanded to include the natural world, behavior leading to destruction of the world will be experienced as self-destruction." One speaker, Walter Christie, assistant chief of psychiatry at the Maine Medical Center, observed that

> the illusion of separateness we create in order to utter the words "I am" is part of our problem in the modern world. We have always been far more a part of great patterns on the globe than our fearful egos can tolerate knowing. . . . To preserve nature is to preserve the matrix through which we can experience our souls and the soul of the planet Earth.

Sarah Conn, a New England clinical psychologist who belongs to a "global therapy group," put it more dramatically. She contended that "the world is sick; it needs healing; it is speaking through us; and it speaks the loudest through the most sensitive of us."

Behind these words lies a boldly affirmative reappraisal of the oceanic feeling—not as an infantile phase to be outgrown, but as a valuable sensibility to be salvaged. Oddly enough, Freud himself anticipated this revision; he might be credited with inadvertently authoring the program of ecopsychology in a single sentence. At one point in his dark ruminations, he candidly acknowledged that "our present ego-feeling is only a shrunken residue of a much more inclusive—indeed, an all-embracing—feeling which corresponded to a more intimate bond between the ego and the world about it." In Freud's typically dolorous view, there was no alternative to surrendering the childlike pleasures of the oceanic feeling in favor of a cruelly diminished ego. But ecopsychologists refuse to settle for that "shrunken residue" of the psyche. For them the newborn's "intimate bond" with nature is the key to a higher order of environmental sanity.

In seeking to combat the environmental illiteracy of their

colleagues, ecopsychologists are up against formidable odds. The orthodox conception of sanity goes beyond psychology; it is embedded in assumptions borrowed from the natural sciences. Where, then, might an ecologically based psychiatry look to find its scientific grounding?

In one way or another all ecopsychologists draw upon some version of the controversial Gaia hypothesis. Developed by English biochemist James Lovelock and American microbiologist Lynn Margulis in the late 1970s, the Gaia hypothesis began its career as a purely technical, biochemical explanation for the long-term stability of the planetary atmosphere. Lovelock and Margulis postulated that the biomass itself may play an active role in preserving the conditions that guarantee the survival of life on Earth. Here is how Margulis summarizes the hypothesis:

> Gaia, the superorganismic system of all life on earth, hypothetically maintains the composition of the air and the temperature of the planet's surface, regulating conditions for the continuance of life. . . . On earth the environment has been made and monitored by life as much as life has been made and influenced by the environment.

If Lovelock and Margulis had given their theory a conventional scientific name (like Biocybernetic Universal System Tendency, or BUST, as Lovelock once facetiously suggested), it might have passed quietly into the professional literature as a mildly interesting bit of speculation. But Lovelock wanted something more colorful. Struck by the fact that the biomass, in its long-term self-regulation, exhibits "the behavior of a single organism, even a living creature," he called the hypothesis "Gaia," after the ancient Greek earth mother. The name at once touched the idea with magic; it took on an astonishing popular appeal that was far beyond anything Lovelock and Margulis intended. Their brainchild proved to be especially attractive to the Deep Ecologists. Deep Ecology, the biocentric wing of the environmental movement, seeks to replace our anthropocentric worldview with an ethic based upon the sort of animistic communion with nature that can (with enough poetic license) be read into the Gaia hypothesis. Some ecofeminists have gone even farther. For them, Gaia represents scientific validation for a semi-legendary "goddess culture" where, once upon a time, men and women lived in respectful partnership and the more ecologically sensitive qualities were paramount.

In its search for a theoretical foundation, ecopsychology need not go so far. It might simply see Gaia as a dramatic image of ecological independence that may well extend beyond the planet. The cosmology of the late 20th century has come to see the universe as an evolving hierarchy of physical and biological systems that reach back to the initial conditions that followed the Big Bang. With that perception, we reverse Freud's worldview and all the psychology based upon it. In place of the inevitable heat death, we have the astonishing ordered complexity of natural systems holding out indefinitely against entropic exhaustion. In place of cosmic alienation, we have life and mind as fully at home in the universe as any of the countless systems from which they evolve. More hypothetically, we have the possibility that the self-regulating biosphere continues in some sense to "speak" through the human unconscious, making its voice heard even within the framework of modern urban culture.

THIS IS THE LINE OF THOUGHT I have pursued in my recent book *The Voice of the Earth*, suggesting that an "ecological unconscious" lies at the core of the psyche, there to be drawn upon as a means for restoring us to environmental harmony. The idea is speculative—but then, psychological theories never set out to prove, only to persuade. They are best seen as commitments to understanding people in certain ways. Under the influence of the environmental movement, ecopsychology commits itself to understanding people as actors on a planetary stage who shape and are shaped by the biospheric system. Even if that commitment never qualifies as more than a hypothesis, it can make a significant political difference.

Like all political movements, environmentalism is grounded in a vision of human nature. What do people need, what do they fear, what do they love? What makes them do what they do: reason or passion, altruism or selfishness? Questions like these set the tone and shape the tactics of political action. Start from the assumption that people are greedy brutes, and the tone of all you say will be one of contempt. Assume that people are self-destructively stupid, and your tactics are apt to become overbearing at best, dictatorial at worst. As for those on the receiving end of the assumption, shame has always been among the most unpredictable motivations in politics; it too easily laps over into resentment. Call someone's entire way of life into question—as environmental activists are prone to do—and what you are apt to produce is defensive rigidity.

The time is at hand for the environmental movement to draw up a psychological impact statement. Ecopsychology has a role to play in that project. If psychology needs ecology in order to find an adequate image of human nature, ecology also needs psychology in order to find more sensitive ways to address the public it wishes to persuade. In this effort, the environmental movement has other means to draw upon besides shock and shame. Ecopsychology holds that there is a sympathetic bond between our species and the planet that is every bit as tenacious as the sexual and aggressive instincts Freud found in the depths of the psyche. The "greening of psychology" begins with matters as familiar to all of us as the empathic rapport with the natural world that is reborn in every child, and that survives in the work of nature poets and landscape painters. Where this sense of shared identity is experienced as we most often experience it person to person, we call it love. More coolly and distantly felt between the human and not-human, it is called compassion. In either case, the result is spontaneous loyalty.

Even some militant environmental activists are coming to see the importance of integrating that instinctive "call of

Continued on page 80

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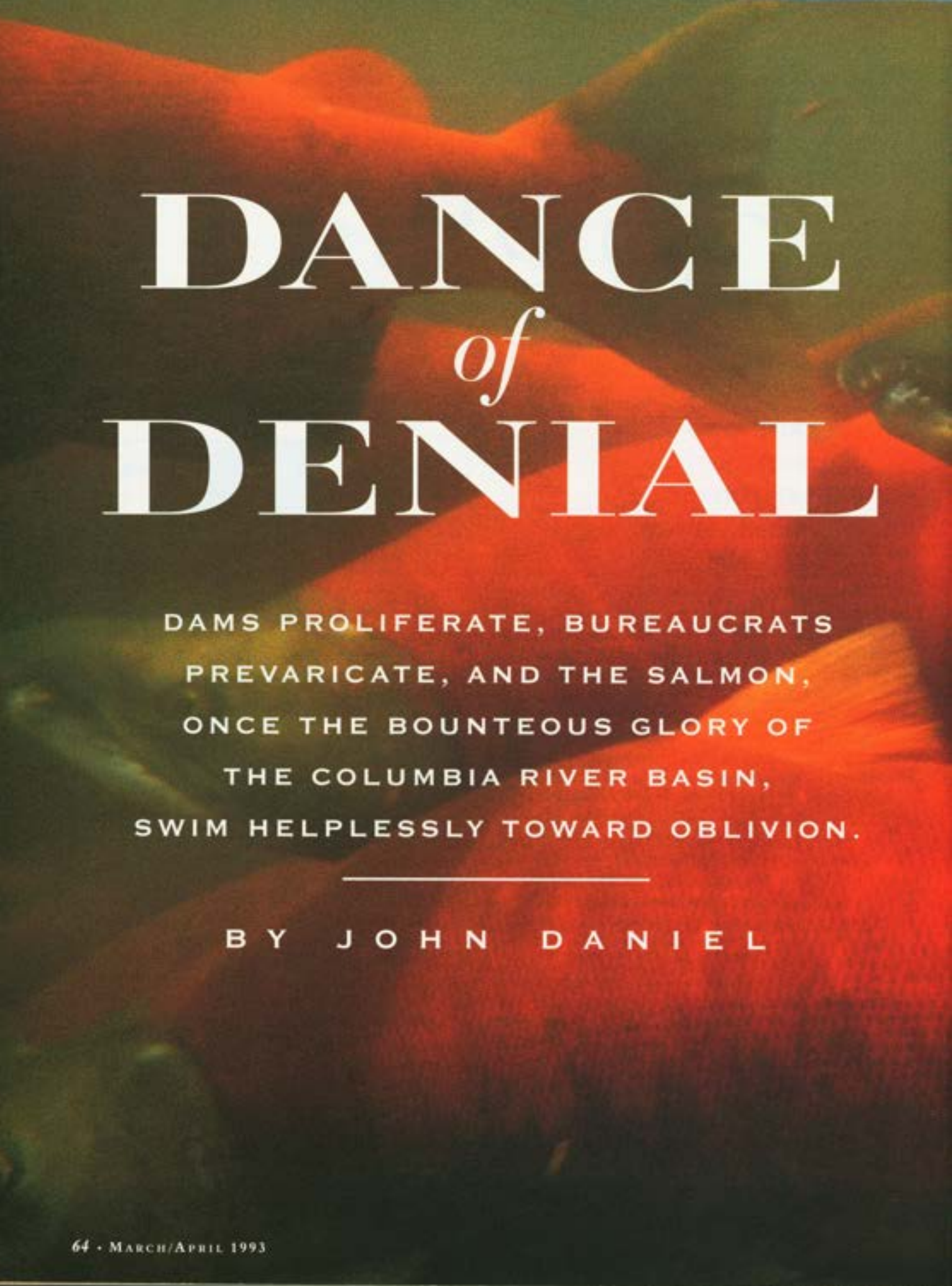


DANCE *of* DENIAL

DAMS PROLIFERATE, BUREAUCRATS PREVARICATE, AND THE SALMON, ONCE THE BOUNTEOUS GLORY OF THE COLUMBIA RIVER BASIN, SWIM HELPLESSLY TOWARD OBLIVION.

BY JOHN DANIEL

MICHEL ROGGO

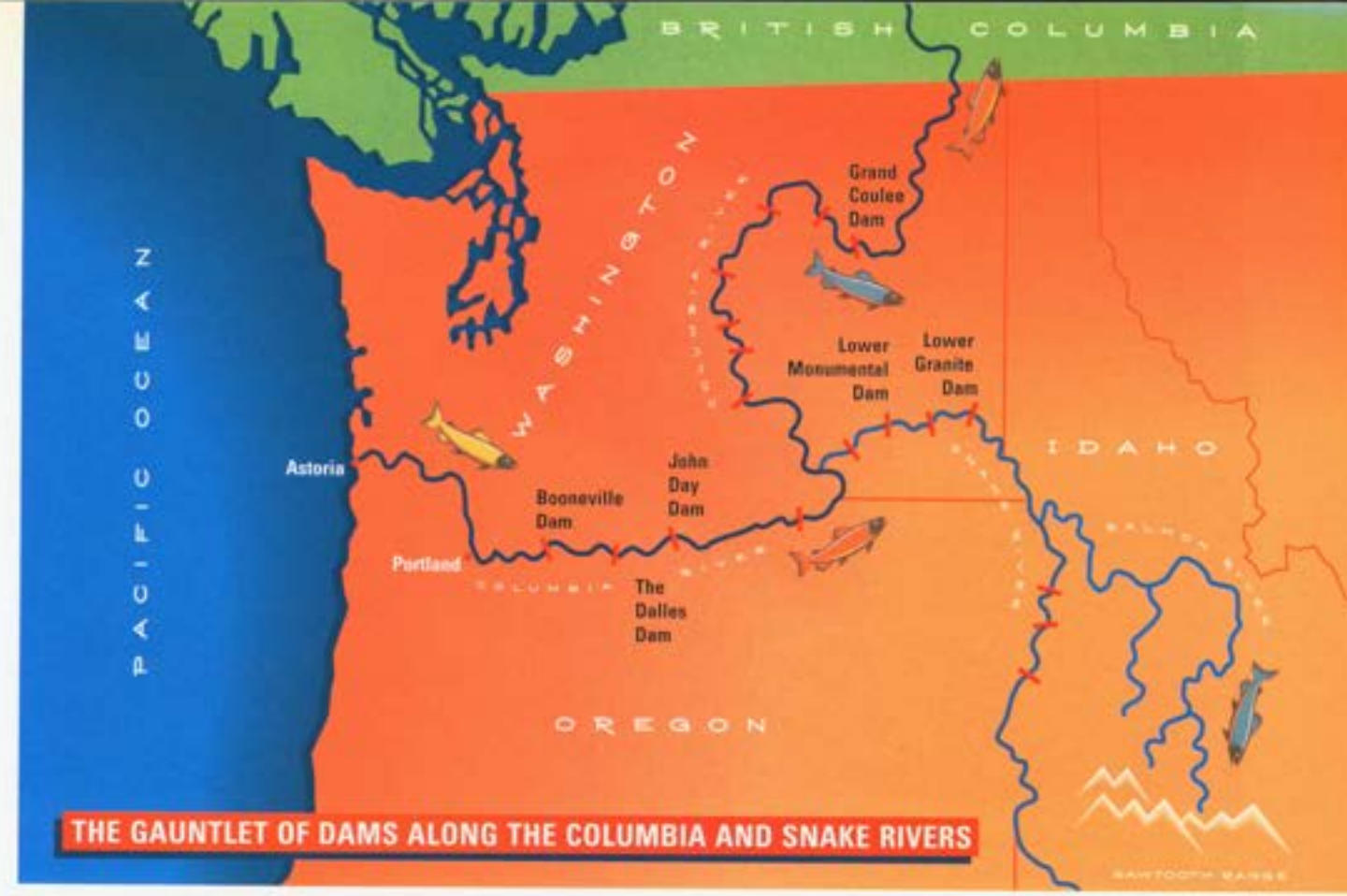
The salmon are close to three feet long in a stream just ten feet across. They hover in the shade of a lodgepole snag, tails slowly waving, mouths opening slightly and closing. Suddenly the biggest of the three chases a smaller competitor into the shallows downstream, backs and tails slicing the surface until the bigger fish veers to deeper water and the smaller one wriggles upstream again, belly to the gravel, more out of the water than in. It's a surge of life that belies their true condition. Their spotted backs are splotched white, their fins frayed. Within a few weeks, spawning completed, they will die.

After spending most of their lives roaming the North Pacific, these successful spawners have traveled 850 miles from the mouth of the Columbia River to reach a meandering stretch of Marsh Creek, high in the Sawtooth Range of Idaho. Eating nothing after entering fresh water, they climbed the fish ladders of four big dams on the lower Columbia and four more on the lower Snake, then turned east up the River of No Return and south up the Middle Fork Salmon, leaping up falls and struggling through shallow currents caused by seven years of drought. At each confluence of river or stream they knew where to go. Something in the water told them, something that smelled like home. Three to five years ago, these fish were born in this same mountain stream, probably within a hundred yards of the pool where they now pursue their courtship.

These are some of the few Snake River spring chinook salmon that are left. In 1991 only 40 redds, or spawning nests, were counted in the Marsh Creek drainage; in the late 1950s and early '60s, the annual count averaged nearly ten times that number. Other streams in the area have shown similar declines in chinook, but it's the Snake River sockeye that has experienced the most precipitous population collapse. These sockeye used to spawn only a few miles from Marsh Creek in Redfish Lake, named after the bright crimson of the sockeye's spawning stage. Twelve to twenty thousand fish used to return here each summer. As recently as the 1950s, the run was four to five thousand. In the summer of 1992, exactly one Snake River sockeye returned to its ancestral home. The future of the stock is now in the hands of a captive-breeding program conducted by the Idaho Department of Fish and Game.

The Columbia River watershed, where these and other wild salmon runs are in danger of extinction, was once one of the richest salmon-producing regions in the world. Reaching into what are now six states and a portion of British Columbia, its rivers and streams received many millions of returning fish each year. Chinook, sockeye, coho, and steelhead thronged the waters in continuous runs virtually year-round, having adapted themselves through evolutionary time to the changing habitational nuances of 15,000 miles of spawning streams. The teeming runs supported human cultures from the first peopling of

Little Redfish Lake, high in Idaho's Sawtooth Range, is considered critical habitat for Snake River sockeye salmon.



THE GAUNTLET OF DAMS ALONG THE COLUMBIA AND SNAKE RIVERS

North America, giving rise to ceremonies celebrating the first fish of the season and stories depicting salmon and humans living in counterpart worlds. Lewis and Clark were astonished at their prodigious numbers, as were later settlers. "So thick were they," wrote one early farmer, "that often, in riding a horse across at the ford, I have been compelled to get off and drive them away before my horse would go across."

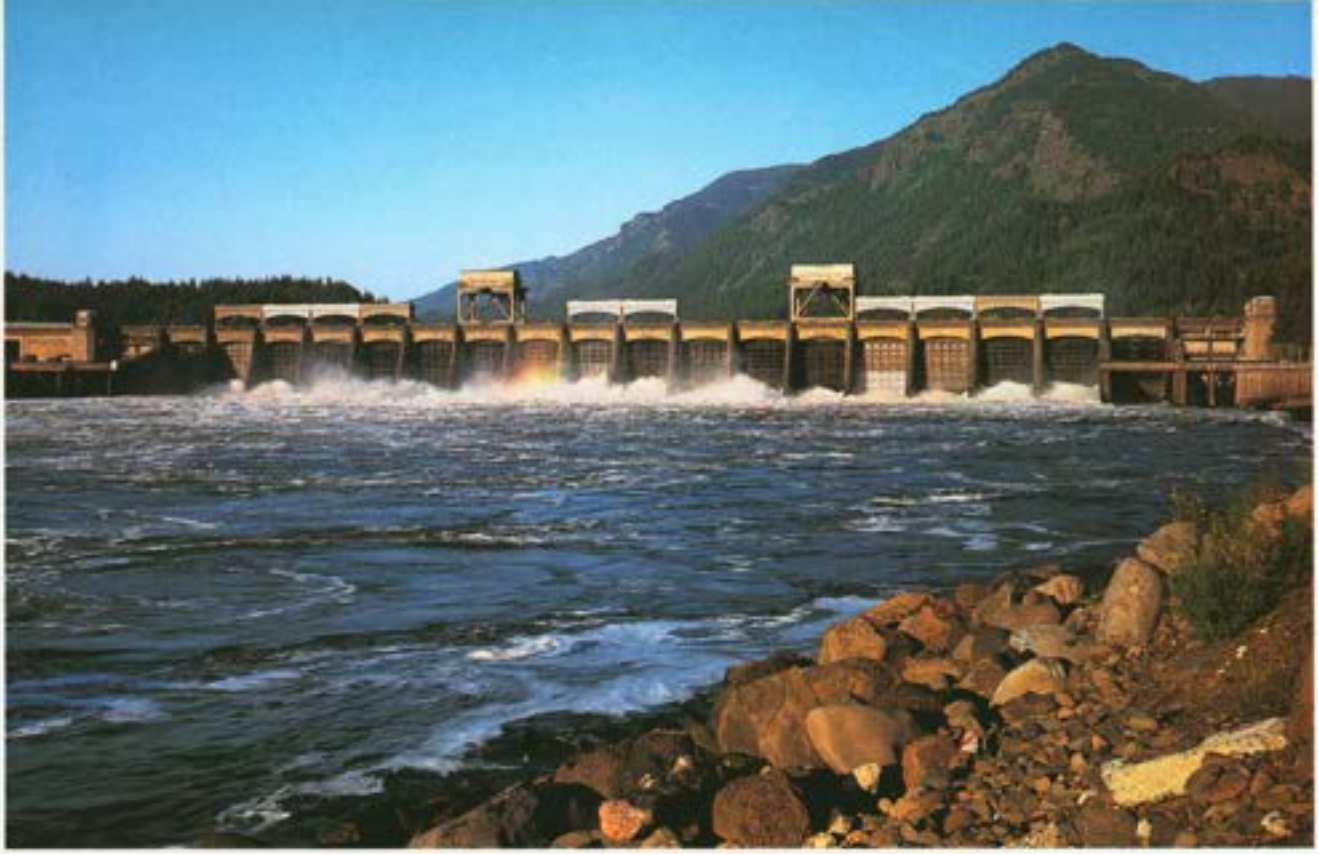
More profitable than driving them away, of course, was catching them. Pitchfork and wagon worked well for farmers, but with the advent of canning technology in the 1860s, an industrial fishery went to work. Cannery towns sprang up all along the coast, none busier than Astoria, Oregon, at the mouth of the Columbia. Upstream, clear into the lower Snake, the river was rigged and plied with pound nets, gillnets, horse-drawn purse seines, and great fish wheels turned by the current that each could scoop out 50 tons of flopping salmon in a season. Ocean trolling blossomed as well, from Monterey Bay 650 miles south to Bristol Bay 1,700 miles north on the Alaskan coast. Regulation was spotty and ineffective. Chinook runs were shrinking by 1890; as the harvest shifted to smaller species, these too declined.

As recently as the 1950s, though, the runs were still sizable enough to support commercial fisheries, traditional Indian harvests, regular sport-fishing seasons, and considerable illegal poaching. Regulation is strong and thorough today, and it's hard to fish to extinction a species with the salmon's prodigal genius for reproduction. Since the early years of the century, more damage has been done by the other two bulwarks of the original Northwest economy—timbering and agriculture.

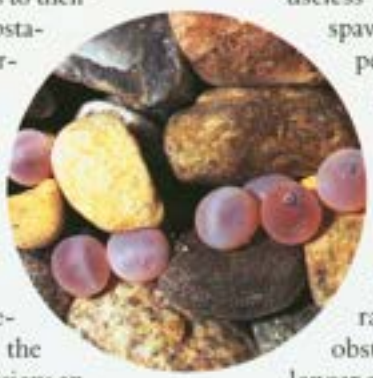
Salmon depend on clear gravel streambeds for their spawning. The female, lying on her side, uses her tail to work a hollow into the gravel, into which she releases her eggs while one or more males simultaneously deposit their milt. The female then covers the eggs as she scoops out gravel for the next redd. Silt from logging and road-building has smothered the gravel of many spawning streams. Splash dams, built by early timbermen to store water for flushing logs downstream, have blown out pools and spawning beds with their releases. And cutting right down to streamside, until recently a standard practice, has caused loss of shade, resulting in high water temperatures that salmon can't tolerate.

On the rangelands of the inland Northwest, hordes of cows, unconstrained for decades, have trampled deep, narrow, gravel-bottomed creeks into wide, shallow, silted sloughs. The overgrazed lands have lost some of their capacity to absorb water, yielding quick run-offs and dry, eroded channels. Streams and in some cases entire rivers—notably the Umatilla in northeast Oregon and the Yakima in southcentral Washington—have been seasonally dried up by irrigation diversions. And in many streams that still support spawning, diversions can turn farmers' fields into enormous fish traps, filling them annually with millions of juvenile salmon that die as the water seeps away.

Hydraulic mining, filling of wetlands, and pollution from pulp mills and sewage outfalls have also figured into the de-



cline of Columbia Basin wild salmon from their primordial strength of untold millions to some 300,000 today. To push them to the brink of extinction, however, required more than overfishing and the many serious blows to their spawning and rearing habitat. "The only obstacle the salmon have not been able to overcome," says Idaho Governor Cecil Andrus, "was the pouring of concrete across their rivers."



Dams on the Columbia had been dreamed of for decades; the federal dollars of Franklin Roosevelt's New Deal made the dream come true. It was a grand, populist vision: an abundance of cheap electricity for homes and industry, irrigation to turn the basin green with crops, seaports in the dry Inland Empire, a sure harness on the river's destructive floods, and the creation of thousands of jobs to lift the Northwest out of depression. Bonneville, the first big federal dam, was finished by the Army Corps of Engineers in 1938. The Bureau of Reclamation built Grand Coulee in 1941. Others followed, until by 1968 only one 50-mile stretch of the Columbia River—through the Hanford nuclear reservation—still flowed free. By 1975 the Snake had been similarly tamed above and below Hells Canyon, and dozens of dams had gone up on the tributaries of both rivers. In less than half a century, the running waters of the Columbia Basin had been converted into an enormous apparatus of regulated flow, producing power, food, and water transportation for a burgeoning human economy.

As fishermen and biologists had warned, there were profound impacts on the salmon. Hundreds of miles of fall chinook spawning habitat in the main-stem rivers became useless lake bottom, and thousands of miles of spawning streams used by upriver runs were permanently walled off. Grand Coulee, too tall for fish ladders, eliminated the most fabulous run of all—the chinook called June hogs, fish that grew to 5 feet long and 125 pounds and used that bulk to fuel their epic journey into the Columbia headwaters in British Columbia. The returning June hogs of 1941 milled in the tailrace of the new dam, waiting weeks for the obstruction to clear, until they could wait no longer and spawned where they were. Their stock held on below the dam until the mid-1950s, when it disappeared forever.

Grand Coulee Dam removed 1,000 river miles of salmon habitat from the upper Columbia watershed. By the mid-1960s, with construction of the Hells Canyon complex of dams, the upper Snake system was effectively blockaded too—spring chinook that once swam all the way to northeast Nevada were cut off 500 miles from home. All told, more than half the accessible habitat in the Columbia Basin has been sealed off behind impassable barriers.

Salmon hatcheries have been built throughout the region to compensate for lost habitat, but managers have had mixed luck in creating and sustaining viable runs. Hatcheries constructed to make up for Grand Coulee worked imperfectly for a few years and then not at all; eventually they were shifted to trout production. Where hatcheries have suc-

ceeded, they have frequently succeeded too well. The millions of fish they pump into the Columbia-Snake system have tended to mask the plight of the wild stocks—fishermen have been pacified with oodles of salmon while the watershed's ability to sustain natural populations has declined. An all-wild fish population became a mostly hatchery population, but since both kinds swim together in rivers and sea, fishery practices geared to hatchery numbers have further diminished the already weakened wild stocks. What's more, hatchery fish are rife with diseases—barely controlled with antibiotics—that they can spread among wild populations, and they compete for food and position in the water with their badly outnumbered native relatives.

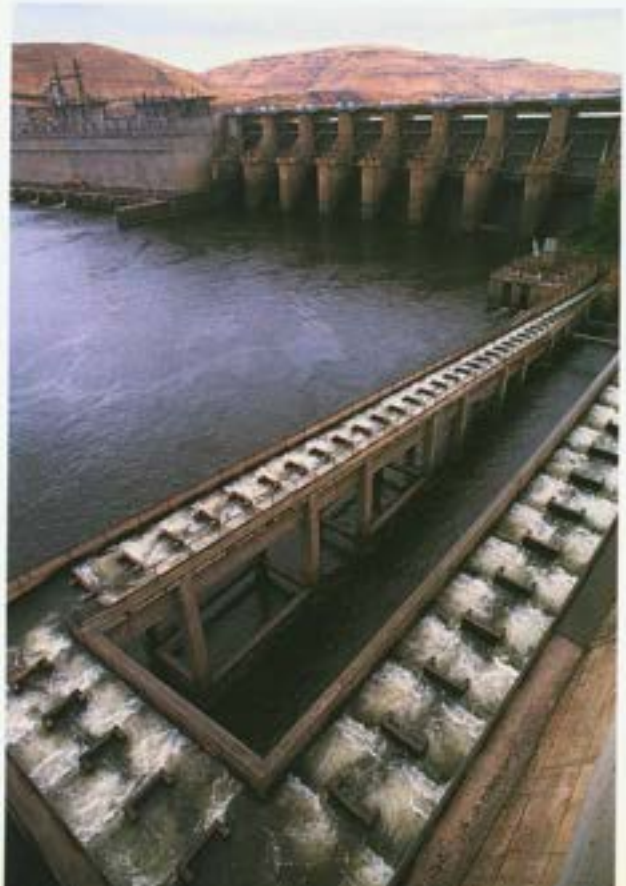
In the long term, the most ominous danger of hatchery production may be its impact on the genetic constitution of the salmonid species. The spring chinook in Marsh Creek look and behave much like spring chinook from California to Alaska, but they know their particular place, and the peculiar rigors of getting there, like no other fish. Their genes have acquired a specific Marsh Creek expertise, a hard-won knowledge that forms one unique strand in the tapestry that is the salmonid family. As hatchery fish interbreed with and replace wild stocks, the tapestry loses its texture and ultimately its strength—the gene pool is homogenized, and the salmon's ancient ability to adapt itself to a changing environment may be compromised. That is why the Endangered Species Act protects not only the chinook species, *Oncorhynchus tshawytscha*, but every genetically distinct population of the species that can be identified.

Hatchery practices now aim to avoid genetic dilution, but even if that fades as a problem, hatcheries are hard-pressed to fill their original role as fish-producing factories. In Idaho, no matter how many juveniles the hatcheries release, adult salmon are not returning in sufficient numbers to support fisheries—or even, in many cases, to perpetuate the hatchery programs. Hatchery or wild, the fish must run the rivers, and the rivers are blocked with dams. Bonneville did little damage by itself, but as three more dams were built on the lower Columbia and four on the lower Snake, the cumulative impact was dramatic. According to the Idaho Department of Fish and Game, spring and summer chinook redd counts in the Salmon River drainage have plummeted from about 6,000 in 1957 to a few hundred in 1991. In the same period, fall chinook returns have fallen to fewer than 500 adults a year, the Snake River sockeye has been reduced to a tenuous captive existence, and the Snake River coho has gone extinct.

Fish ladders exact a toll of 5 to 10 percent of returning spawners at each of the main-stem dams, but runs could thrive at that level of mortality. It's in the other direction that the engineered river system is killing the salmon. The dams simply were not designed to pass juvenile salmon, or smolt, safely downstream. In high-flow years, these fish—three to six inches long, depending on species—have been swept over the spillways, which has put them at risk of dying from gas-bubble disease in the nitrogen-supersaturated waters below. In low-flow years, more typical in the dry Snake River basin, the smolt have to pass through the generating turbines, with predictable results. Turbine intake screens and bypasses have been or are being installed at all eight dams, but such retrofitted systems are imperfect. At Lower Granite Dam on the Snake, the bypass collects 58 percent of chinook smolt at best; at Bonneville Powerhouse Number Two, the success rate is 20 percent for all species.

Time is as formidable an obstacle. Before the dams went up, when the Snake and Columbia surged in the spring with a wilderness of power behind them, the salmon hatched in the Sawtooth Range might make the journey to the Columbia estuary in as little as a week. Now the spring runoff is stored behind dams to generate winter power, and with 150 miles of river converted into a series of slack-water reservoirs, it takes the smolt up to two months or longer. The smolt face upstream, letting the current do the work. As they travel they are changing from freshwater to saltwater fish, governed by a genetic clock set by ages of fast spring floods. If their transformation completes itself before they reach the estuary, their chances of survival plunge to zero. In addition, the slow-moving reservoirs breed multitudes of squawfish and other smolt predators, and elevated water temperature also takes its toll. In all, according to state and federal fishery agencies, the death rate for migrating smolt can exceed 15 percent at each of the eight main-stem dams. More than 90 percent of human-caused mortalities are due to the dams and reservoirs.

Bonneville Dam (facing page) is the first hurdle for returning salmon. Below, a fish ladder on Lower Monumental Dam.



It was known all along that building a succession of dams would kill lots of salmon. The U.S. Fish and Wildlife Service warned of potential disaster as early as 1946; the Corps of Engineers continued to build dams that ignored downstream migration. Biologists, Indian tribes, and fishermen tried to call attention to the salmon's plight, but their voices were lost in the chorus of boosterism. Bonneville Power Administration, the federal agency created to market the system's electricity, warned of shortages and blackouts if more dams weren't built, even as it was selling a growing percentage of its power to aluminum manufacturers that located on the Columbia only because cut-rate energy was available. Consumers became accustomed to paying half and using double the national average. Utilities, agricultural interests, and would-be ports clamored for more water development, and regional newspapers that had originally questioned the need for dams became cheerleaders for BPA and the Corps.

Ed Chaney, a consultant who has devoted most of his adult life to saving the salmon, says the fish have been victimized by an institutional "dance of denial," beginning with the poorly designed dams and continuing today. He first encountered the dance in 1968, when the Corps brought John Day Dam on the Columbia on-line in time for Hubert Humphrey to dedicate it, even though its ladders weren't fully operative. An estimated 200,000 adult steelhead, chinook, and sockeye died in the high-nitrogen tailwater and washed up in windrows on the riverbanks. The dam was duly dedicated, and the Corps denied it had killed the fish. Some people said the real problem was the Indians.

Blaming Indians is a Northwest tradition. As the salmon dwindled in the 1960s, there were attempts to outlaw the Indian fisheries promised in perpetuity by treaty. Then a landmark federal court decision in 1974 repudiated the state of Washington's claim that Indian harvests were ruining the runs, and guaranteed the tribes 50 percent of the drastically diminished runs. Resentments flashed then and linger today, but the tribes have repeatedly cut back their catch—and in some places have no salmon to harvest at all.

Indians have lost the most. At a place called Celilo in the Long Narrows of the Columbia, the river once broke into a chaos of islands and waterfalls where the salmon had to surface and leap their way upstream. Perched on rocks and rickety scaffolding, Native Americans fished there for at least 10,000 years, spearing the big chinook and wresting them from the river in long-handled nets. They fished for themselves, and they fished for trade with other tribes that gathered annually from across the Northwest. The network of commerce centered at Celilo extended over the Rocky Mountains and into the Great Plains. It was one of the great culture centers of North America, it was based on salmon, and when The Dalles Dam closed in 1957, it was drowned beneath one more slackwater lake.

By the late 1970s, the tribes, fishery agencies, and salmon advocates were contemplating filing Endangered Species Act petitions on behalf of the most depleted runs. At the same time, Congress was considering a bail-out of BPA's ill-fated program to build nine nuclear-power plants. The two causes converged in the Pacific Northwest Electric Power Planning and Conservation Act of 1980, which established the four-state Northwest Power Planning Council. The act instructed the council to make energy conservation its first priority, and to protect and enhance fish and wildlife affected by the hydropower system. Salmon were guaranteed equitable treatment with other river users. Conservationists held off on the endangered-species petitions, hopeful that the council would work quickly to rescue the runs.

The council has banned hydropower development from critical habitat areas, enacted a successful salmon-restoration project on the Umatilla, accelerated the use of fish screens for agricultural diversions, and encouraged water and energy conservation. But on the crucial issue of main-stem passage, which Congress specifically instructed it to address, the council has largely failed. Part of this may be due to a lack of legal muscle—BPA, the Corps, and other agencies are required to take the council's recommendations into account, but not necessarily to follow them; thus the Corps could ignore the council's early appeals for turbine screens and smolt-bypass systems. But there has also been a failure of will and judgment. The council's most substantial main-stem action in the 1980s was a Snake River "water budget" aimed at storing water for springtime release to speed smolt migration to the sea. The budgeted quantity, however, was

far less than biologists had prescribed, and water in the river rarely fulfilled even the budget's own inadequate objectives. "The system continued to operate for maximum power and profit," says Bill Arthur of the Sierra Club's Northwest office. "The fish got what was left over."

Ed Chaney, Bill Bakke of Oregon Trout, and a few others argued throughout the 1980s that nothing was changing for the fish except that they were disappearing. Nobody listened, though, until 1990, when the Shoshone-Bannock tribe of central Idaho petitioned for an endangered-species listing for the Snake River sockeye—the fish that now returns to Redfish Lake in single-digit numbers. Fish advocacy groups went to court to force an emergency listing from the National Marine Fisheries Service, the federal agency with responsibility for anadromous fish. By 1992 the agency had listed the sockeye as endangered and, responding to further petitions, had listed Snake River fall chinook and spring-summer chinook as threatened. (Lower Columbia coho, also proposed for protection, were determined to be extinct.) Work on a binding recovery plan for the runs was begun by NMFS, and will be issued in final form this year.

With BPA, the Corps, and hydrosystem beneficiaries suddenly interested in saving the salmon, the Northwest Power Planning Council approved a regional strategy in 1992. At the heart of the plan are two controversial and drastically different approaches to the problem of how to get smolt to the sea. One is to continue the existing practice, begun in the late 1970s, of collecting smolt from the bypass systems of upriver dams, barging or trucking them downstream and releasing them into the Columbia below Bonneville. "Juvenile Fish Transportation" has been promoted aggressively by power, irrigation, and shipping interests. They point to seemingly glowing statistics: more than 95 percent of transported smolt survive the barge trip, and studies indicate that between 1.6 and 2.5 barged fish return as adults for every one that makes it through the dams.

But those figures show only that barging is a marginal improvement over running the gauntlet of dams—not that it can save and restore the runs. "They've been transporting fish for a decade and a half," says Jim Baker, the Sierra Club's Northwest Salmon Campaign coordinator. "If it works, why are Snake River salmon going extinct?" The stress of collection and transportation may be harder on them than on hatchery fish, and the barges are excellent disease incubators. The Columbia Basin Fish and Wildlife Authority, a coalition of state, federal, and tribal agencies, reported earlier this year that fish transport can't replace in-river migration and may have harmed wild stocks.

Barging may have a place as a temporary measure, particularly in years of low river flow. But with the council's endorsement it is looking more like a permanent program. Is it desirable or even possible, conservationists ask, to "rescue" a species by separating it from its habitat? And even if

Lower Monumental Dam is one of the "killer dams" on the Snake and Columbia around which juvenile fish are hauled by truck and barge. Facing page: sockeye ready to spawn.

it is possible, at what point does human intervention turn a wild species into a captive artifact? Instead of removing fish from their rivers, conservationists say, it's time to fix the rivers so that fish can live in them.

That is the aim of the other controversial measure in the council's salmon strategy. To improve smolt survival during spring migration, slackwater rivers must be allowed to flow freely. In theory, there are three ways of doing this. One is a radical option: to cut gated tunnels through the dams, enabling the river to run in its old channel in the spring. A second way is to release water from upstream storage and limit upstream withdrawals. The council's "water budget" was such an attempt, and its current plan calls for further flow increases to be obtained through upstream releases, water-efficiency improvements, and various tinkerings with agricultural water rights. But the Snake is a dryland river, and even if its watershed were squeezed of every drop—a prospect that makes Idaho farmers nervous—it could not provide enough additional water to restore the salmon runs.

That leaves the third option, a compromise championed by Ed Chaney, Idaho Governor Cecil Andrus, and Save Our Wild Salmon, a coalition of 26 conservation and fishery groups that includes the Sierra Club. Under this plan the levels of the four Snake River reservoirs would be drawn down for two-and-a-half months during the spring migration, the dams spilling enough water to let the river run something like a river again. Smolt would pass the dams via existing bypasses and a gentle ride over the spillways. Barges

couldn't move during this period, but the commodities involved are imperishables (mostly grain and wood products) that could be shipped by rail or truck. On the water-rich Columbia, only the John Day pool, at 76 miles much longer than the others, would have to be drawn down to the minimum level at which river traffic can operate. Some irrigators would need to extend their pump intakes; the cost would amount to a small increase in the federal subsidies they already receive.

Bonneville Power Administration originally claimed that changing the hydrosystem to protect salmon would force utility rates to skyrocket. More recently it announced a wholesale rate increase of about 20 percent by 1994, and tried to tie the hike to the cost of salmon recovery. In fact, only one-fifth of the increase will be salmon-related, and what little power production might be lost can easily be offset by switching to natural gas, exchanging energy with California, and conserving energy in a region that uses it with abandon. The agency is making a concerted effort to avoid drawdowns or any other alteration of business as usual. "With a $3 billion budget, BPA can pursue a major public-relations campaign," says Jim Baker. "And they've shown no aversion to spreading misinformation that amounts to disinformation." Ed Chaney is even blunter. "There are people who ought to be arrested for what they're doing," he says.

As it spreads its smokescreen, BPA ignores the economic devastation caused by the collapse of the basin's salmon runs. Communities from Salmon, Idaho, to Astoria, Oregon, to the coast of Alaska have been hurt or ruined as fish have disappeared. Commercial gillnet seasons on the lower Columbia once lasted months; now they're measured in weeks and sometimes days. The Pacific Fisheries Management Coun-

cil very nearly closed the entire Northwest to coho fishing in 1992. Sport-fishing in Idaho used to support vigorous local economies; Idaho hasn't had a statewide salmon season since 1977. Restoring the runs to some measure of vitality, far from spelling doom, would amount to a long-term investment in the economic health of the Northwest.

The Corps of Engineers, BPA, and the power utilities are used to controlling the Columbia-Snake system, and they are loath to relinquish even a fraction of that control. The Corps, to its credit, seems to be growing more receptive to change, but BPA and the utilities are still doing the denial dance, blaming the salmon's demise on everything but the dams. It is true that salmon runs are in trouble up and down the Pacific Coast in many undammed rivers and streams; habitat degradation is probably the single most important cause of the general decline, and that problem has been insufficiently addressed in the Columbia Basin. But there is habitat in Idaho's Frank Church Wilderness that is little changed since the Pleistocene except in one particular: the streams are 90 percent empty of salmon. To restore and secure habitat without altering the dams' death-grip on the rivers, in the words of one Idaho fishery biologist, "is just pissing in the wind."

Will drawdowns save the fish? No one can promise that, but it's clear that business as usual will obliterate them, and that barging and tinkering with inadequate flow volumes, while they might preserve minimal populations, will not restore productive runs. "If there's another way to create the velocity those fish need, show us," says Cecil Andrus. "The fear-mongers downriver have been fighting our plan for two years now, but they've got no plan of their own."

A harder question is whether drawdowns will ever happen. In 1991 the Corps tried one out at Lower Granite Reservoir. The turbines ran, the dam was fine, and damage to marinas, port facilities, and highways was in every case permanently fixable. The Corps says it requires no more physical trials, and given that seeming willingness to proceed, a strong endorsement from the Northwest Power Planning Council might have gotten a drawdown program under way. But the bitterly divided power planners made no firm decision, voting only a very tentative approval of drawdowns by 1995. Few believe they will come to pass. At this point the council's spine is simply not stiff enough to overcome the resistance of BPA, the utilities, and all the other subsidized river interests that support the status quo.

With cheap hydropower, industrialists once hoped to make the Columbia River Gorge "the Pittsburgh of the West."

The National Marine Fisheries Service, charged with administering the Endangered Species Act with regard to anadromous fish, seems headed down the same path—it could have ordered Snake River drawdowns in 1992, but declined. Ed Chaney's Northwest Resource Information Center, along with the Sierra Club and other members of Save Our Wild Salmon, has sued the agency.

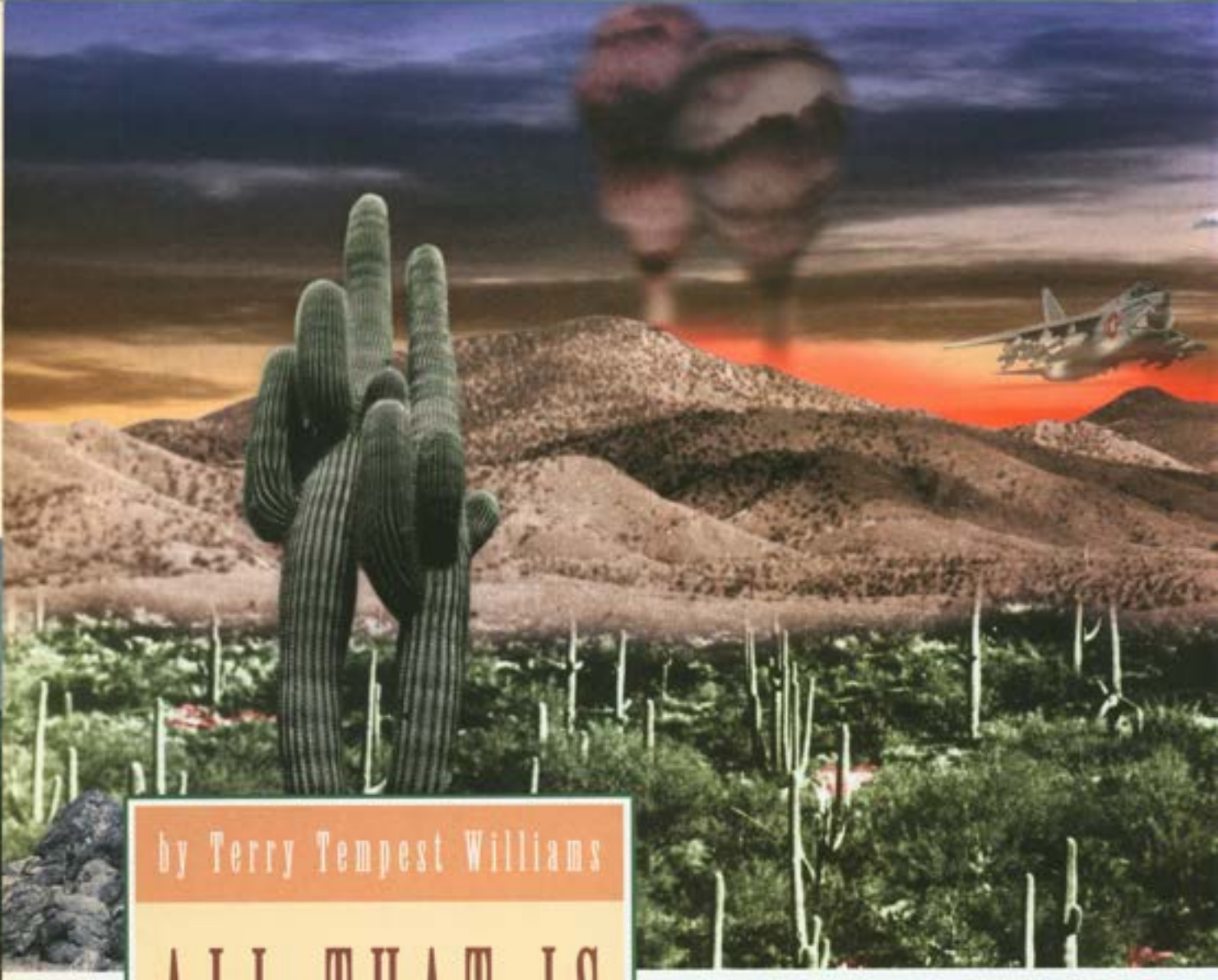
Conservationists are confident that the law is on their side, and it may be that judicial intervention is their best immediate hope. In the longer term, prospects are mixed. Ed Chaney, who has spent 25 years working for the salmon, is not particularly hopeful: "In the '70s I thought the Indian treaty right would save the fish. In the '80s I thought the power council would save them. I thought for a while, in the '90s, that the endangered species listings would do it. Now I'm not so sure. We're up against a mindless ideological resistance to reality."

One hope lies with the people of the Northwest, who know and love the salmon as the most distinctive living feature of their region. Despite all the disinformation, the general public is joining conservationists, fishermen, and Native Americans in awakening to the salmon's plight.

The best hope, of course, lies with the heroic travelers themselves. The spawners in Marsh Creek, gently waving their tails, overcame enormous odds to complete their journey, one that began long before they hatched in the Marsh Creek gravel. It began before the first dam was built, before Indians ever fished at Celilo, long before the great ice ages that shaped the land as we know it. There are fossils in the Oregon desert of a ten-foot-long ancestral salmon that ran North American rivers 5 million years ago. Five million years of pioneering the watersheds and shape-shifting through time, adjusting to volcanic explosions and glacial advances, fertilizing barren gravels and basalts with the rich captured life of the sea, raising temperate jungles and mountain forests out of their bones and flesh. To know the salmon is to know the indomitable energy of life itself. ■

JOHN DANIEL *is the author of* The Trail Home *(Pantheon, 1992) and* Common Ground *(Confluence Press, 1988).*

► *For more information, see "Resources," p. 106.*



by Terry Tempest Williams

ALL THAT IS HIDDEN

Illustrations by Ed Rachles

I REFUSE TO SIGN THE "HOLD HARMLESS" AGREEMENT issued by the Barry M. Goldwater Air Force Range. We need this piece of paper before legally entering the Cabeza Prieta National Wildlife Refuge, which is within the range's boundaries. The document absolves the United States government from "any claim of liability for death or injury arising out of . . . usage of, or presence upon, the said Range."

Those who sign are warned of four facts:

1) That there is "danger of injury or death due to falling objects, such as aircraft, live ammunition, or missiles."

2) That there is "danger of injury or death due to presence of not-yet-exploded live ordnance laying on or under ground."

3) That there is "danger of injury or death from the presence of old mine shafts and other openings or weaknesses in the earth, as well as other natural and/or manmade conditions which are too numerous to recite."

4) That the land "cannot be feasibly marked to warn the location and nature of each danger."

"It's a formality," my husband says. "Just sign it." He is

irritated by my unwillingness to do what we have to do to get into beautiful country.

"It's not a formality for me," I answer. "I want my government to be accountable."

And so I enter the Cabeza Prieta unlawfully, with a map from a friend.

I am traveling with my husband, Brooke, and our desert compadre, ethnobotanist Gary Nabhan. We are here to count sheep: desert bighorn. Nothing official, simply for ourselves.

The night before, in Organ Pipe National Monument some 50 miles from the Cabeza, I dreamt of searching for a one-eyed ram. Brooke and Gary tease me at breakfast when I tell them of my night image.

"Sounds phallic to me," says Brooke.

Gary offers a retort in Spanish or Papago or both and does not translate.

> In a land of ancient silence, a day of counting sheep becomes a day of counting bombs.

I ponder the symbolism and try to locate its place within my psyche. I know of the ram's association in Celtic lore, that the spiral horns are attributes of war gods. In Egyptian mythology, the ram is the personification of Amon-Ra, the Sun God: "Ra . . . thou ram, mightiest of created things." It is virility, the masculine generative force, the creative heat. In the Bible, it is the sacrificial animal.

Conversation shifts in base camp as we load our daypacks for a seven-mile walk to Sheep Mountain. I take two water bottles, sun block, raingear, a notebook and pencil, and a lunch of raisins, cream cheese, and crackers. I also slip in some lemon drops.

Gary hands Brooke and me each a black comb.

"A subtle grooming hint?" I ask.

"For cholla," he grins. "To pull the spines out of your legs when you bump into them."

We begin walking. It is early morning, deeply quiet. Each of us follows our own path in solitude, meandering through mesquite, palo verde, ocotillo, and cholla. The animated postures of the giant saguaros create a lyrical landscape, the secret narratives of desert country expressed through mime. Perhaps they will steer us toward bighorn.

Ovis canadensis. Bighorn walk on the tips of their toes. Their tracks are everywhere. In the vast silences of the Cabeza Prieta, these animals engage in panoramic pleasures; hidden on steep, rocky slopes, they miss nothing. Elusive, highly adaptive to climatic extremes, desert bighorn are graced with a biological patience when it comes to water. Research shows that bighorn here have gone without water for periods extending from July to December, maybe even longer. But most sheep find watering holes or small depressions in the rocks that hold moisture after a rain, enough to drink at least weekly.

In the company of black-beaded gila monsters, I am expendable.

Bones. White bones are scattered between the lava boulders. Given the terrain, tracks, and scat, it's a safe bet they're bighorn. There are ribs, vertebrae, and a pelvis that looks like a mask. Where the balls of the femurs once fit is now empty space. I see eyes. I look around—nothing stirs, with the exception of side-blotched lizards. Now you see them, now you don't.

Brooke and Gary wait ahead of me. Before I catch up to them, I see a saguaro that looks like the Reverend Mother, her arms generously calling me toward her. I come; at her feet is an offering of gilded flicker feathers.

The men tell me the sheep tank is around the next bend; according to the map we are less than a mile away. Bighorn could be watering there.

Gary has found a pack-rat midden made out of cholla and shrapnel. He tells us how enterprising these creatures are in building their dens. "Quite simply, they use what's available," he says. The glare from the silver metal blinds us."We can trace the history of desert vegetation in the arid Southwest through these middens," he continues, "sometimes as far back as 40,000 years. Food remains become cemented with pack-rat urine. These fecal deposits represent centuries of seed gathering. There are stories here."

Brooke accidentally brushes against the den as he turns to leave. He winces. A cholla hangs from his calf, spines imbedded in flesh. Out comes the comb, out come the needles. The clouds are beginning to gather and darken. Barrel cacti are blooming, blood-red.

Bighorn are tracking my imagination. I recall the last one I saw, a young ram with horns just beginning to curl. He was kneeling on wet sand as he drank from the Colorado River. His large brown eyes looked up, then down to the flowing water. In the Grand Canyon, we were no threat.

Threat. Rams. Rivals. The bighorn was the mascot of my high school. The football song comes back to me. ("Oh, the big rams are rambling, scrambling, rambling . . . ") As Pep Club president, I cut ram tracks out of black construction paper and then taped them to sidewalks leading to the front doors of athletes' homes. Where the tracks ended, we placed rice-crispy treats with a "go-fight-win" letter wishing them luck. In the desolation of the Cabeza, I wonder how I have found my way from the pom-pom culture of Salt Lake City to this truly wild place.

No sheep tank in sight, although Sheep Mountain is. We decide to climb the ridge and eat lunch. The view will orient us and perhaps even inspire us to think like a ram.

Gary pulls out of his pack a small glass bottle filled with something resembling red beads. "Try a couple of these on your cream cheese and crackers," he says.

"What are they?" Brooke asks, taking a handful.

"Chiltepines. The Tarahumara believe they are the greatest protection against the evils of sorcery." We trust our friend and spread them on our crackers.

One bite—instant pain, red-hot and explosive. We grab water and gulp in waves, trying to douse the flames that are dancing in our throats. Gary, blue-eyed and blissful, adds more and more to his crackers. "I once ate 39 chiltepines in a competition," he says nonchalantly. "In fact, in all modesty, I am the Arizona state champion." I bypass lunch altogether and suck on lemon drops, praying for a healing.

It begins to rain, lightly. As far as we can see, the desert glistens. The Growlers, jagged black peaks, carry the eye range after range into Mexico; no national boundaries exist in the land's mind. The curvature of the earth bends the horizon in an arc of light. Virga: rain evaporating in mid-air, creating gray-blue streamers that wave back and forth, never touching the ground. Who is witness to this full-bodied beauty? Who can withstand the recondite wisdom and sonorous silence of wilderness?

All at once a high-pitched whining shatters us, flashes over our shoulders, threatens to blow us off the ridge. Two jets scream by. Within seconds, one, two, three bombs drop. The explosions are deafening; the desert is in flames.

The bombers veer left, straight black wings perpendicular to the land, vertical rudders on either side of their tails. The double engines behind the wings look like drums. The jets roll back to center, fly low, drop two more bombs. Flames explode on the desert and then columns of smoke slowly rise like black demons.

The dark aircraft bank. I have seen them before, seabirds, parasitic jaegers who turn with the slightest dip of a wing. I am taken in by their beauty, their aerial finesse. And I imagine the pilots inside the cockpits seeing only sky from the clear plastic bubbles that float on top of the fuselage, jet

jockeys with their hair on fire following only a cross-line on a screen.

We are now in a cloudburst, the land, the mountains, and the aircraft disappearing in a shroud of dense clouds. Rolling thunder masks the engines and the explosions. Everything is hidden.

"BASIC GROUND WARFARE. TANKBUSTERS," TECHnical Sergeant Robert Sexton tells me. He is the spokesman for the 58th Fighter Wing at Luke Air Force Base, 20 miles west of Phoenix. "What you witnessed were Warthogs at work."

"Excuse me?"

"Warthogs, known by civilians as the Fairchild A-10 Thunderbolt II. They are extremely maneuverable machines that can stay close to their target." He pauses. "Did you watch the war?"

"Yeah, I watched the war."

"Then you saw them in action. These babies carry 16,000 pounds of mixed ordnance: bombs, rockets, missiles, laser-guided bombs, and bullets. They are specifically designed to destroy enemy tanks, and they do. Twenty-three hundred Iraqi vehicles were knocked out during Desert Storm."

"And what we saw below Sheep Mountain?"

"Mock air-to-surface-missile strikes. Some 20 to 30 aircraft use the South Tactical Range each day. This is a 'live fire' area where we train our pilots. It has been since the 1940s."

"Has any ordnance accidentally been dropped on the refuge?"

"Never."

"And how do the jets and noise affect the bighorn sheep?"

"They don't."

Not everyone would agree. Monte Dodson of the U.S. Fish and Wildlife Service maintains that "bighorn continually exposed to sonic booms, as on the Cabeza Prieta Wildlife Refuge in Arizona, may develop severe stress problems that inhibit normal daily living patterns, as well as reproduction."

What I know as a human being standing on the ridge of Sheep Mountain on the edge of the Cabeza Prieta National Wildlife Refuge is that primal fear shot through my bones. In that moment, I glimpsed war.

INSTEAD OF COUNTING SHEEP, I AM COUNTING BOMBS. The A-10s sweeping the sky at high noon are gone. F-16s have taken over. They are silver and sleek. I will learn from Sgt. Sexton that these are one-person, single-engine aircraft designed for air-to-air attack, hence the nickname "Fighting Falcon." Like the peregrine, speed is their virtue. Five hundred miles per hour is a usual clip. The F-15E, also employed above the Cabeza, is a two-person, double-engine jet capable of defending itself air-to-air as well as air-to-ground. It is known to intimates as the "Strike Eagle." Lying on my back with binoculars pointed up, I realize that I am seriously engaged in military ornithology.

Four jets screech above me, and every cell in my body contracts. I am reduced to an animal vulnerability. They can do with me what they wish: one button, I am dead. I am a random target with the cholla, ocotillo, lizards, and ants. In the company of orange- and black-beaded gila monsters, I am expendable. No, it's worse than that—we do not exist.

Over the ridge, bombs batter the desert. The ghosts of war walk across the *bajada*. I imagine their grief-stricken faces, gaunt, cheated. Bombs counted: 23. Sheep counted: 0.

We have dropped down from the pass. Gary and Brooke continue hiking up-canyon; I choose to sit near a windmill where there is a cistern of water, still hoping for a look at desert bighorn.

More jets, more bombs: the machinery of freedom. I scan the hillside with my binoculars. The small, black boulders are covered with petroglyphs; the etched images are pink. I walk across the wash for a closer look. Miniature rock murals are everywhere. Who were these artists, these scribes? When were they here? And what did they witness? Time has so little meaning in the center of arid country. The land holds a collective memory in the stillness of open spaces. Perhaps our only obligation is to listen and remember.

Bighorn. I walk toward him, stoop down, and run my fingers over the primitive outline of his stone body. Wavy lines run out from the hooves like electrical currents. This ram is very old, his horns spiral close to a circle like moons on either side of his head. And then I stand up, step back. This stone sheep has one eye.

NIGHT IN THE CABEZA restores silence to the desert, that holy, intuitive silence. No more jets. No more bombs. Not even an owl or a coyote. Above me is an ocean of stars, and I wonder how it is that in the midst of wild serenity we as a species choose to shatter it again and again. Silence is our national security, our civil defense. By destroying silence, the legacy of our deserts, we leave no room for peace, the deep peace that elevates and stirs our souls. It is silence that rocks and awakens us to the truth of our dreams.

Tonight in the Cabeza Prieta, I feel the eyes of the desert bighorn. It is I who am being watched. It is I who am being counted. ■

TERRY TEMPEST WILLIAMS *is naturalist-in-residence at the Utah Museum of Natural History. Her most recent book is* Refuge: An Unnatural History of Family and Place *(Vintage, 1992).*

PLACE SETTING

Text by Phil Burse • Illustration by Julia Gorton

THE GREAT LAKES

SWEET SEAS OR INLAND SEWERS?

FRENCH EXPLORER SAMUEL DE CHAMPLAIN CALLED THEM "MERS DOUCES" - SWEET SEAS. THE GREAT LAKES ARE SO HUGE THAT A CONTEMPORARY OF CHAMPLAIN VENTURED WESTWARD IN A CANOE THROUGH THE STRAITS OF MACKINAC, ASSUMING, WHEN HE HIT THE FAR SHORE OF LAKE MICHIGAN SEVERAL DAYS LATER, THAT HE'D REACHED CHINA.

SEVENTY-FIVE PERCENT OF THE GREAT LAKES' SHORELINE IS UNSAFE FOR SWIMMING OR FISHING.

STRETCHED ALONG THE EQUATOR, IT WOULD REACH NEARLY HALFWAY AROUND THE EARTH.

Huron

MORE THAN 81 MILLION BARRELS OF HAZARDOUS MATERIALS ARE HAULED ACROSS THE GREAT LAKES EACH YEAR. ROUGH STORMS MAKE THE TRIP RISKY: 325 OIL SPILLS AND 30 HAZARDOUS-MATERIAL SPILLS WERE REPORTED BY THE COAST GUARD IN 1988.

THE SHORELINE OF ALL FIVE GREAT LAKES TOTALS 5,863 MILES.

EARLY ADVENTURE TRAVEL: IN 1901, ANNIE EDISON TAYLOR BECAME THE FIRST PERSON TO SURVIVE A RIDE OVER NIAGARA FALLS IN A BARREL.

ONE-FIFTH OF AMERICAN AND HALF OF CANADIAN INDUSTRY IS LOCATED ON THE GREAT LAKES AND THEIR FEEDER STREAMS.

Ontario

TORONTO PHOTOGRAPHY STUDENT JEREMY LYNCH CLAIMS HE CAN DEVELOP FILM IN THE CHEMICAL-LADEN WATERS OF LAKE ONTARIO.

1970

Erie

THE OHIO DEPARTMENT OF HEALTH DECLARED LAKE ERIE DEAD.

IN THE 1980s A EUROPEAN TANKER DISCHARGED BALLAST WATER INTO LAKE ERIE, INTRODUCING THE ZEBRA MUSSEL, A TINY ANIMAL THAT GROWS IN HUGE COLONIES, CLOGGING PIPES AND BOAT ENGINES.

IN 1970 THE OHIO

FOR MORE INFORMATION, SEE "RESOURCES."

ECOPSYCHOLOGY

Continued from page 62

the wild" into the basic psychology of the movement. Dave Foreman, one of the country's most prominent "eco-warriors," reminds his colleagues that the greater goal of all they do is to "open our souls to love this glorious, luxuriant, animated planet." To forget that is "counterproductive, and . . . damaging to our personal mental health."

Freud himself had at last to grant the oceanic feeling one major role in adult life. From it arise the fires of Eros, the emotional force that binds the self to others. The ego, he observed, in its conventionally sane relations with the world "outside,"

> seems to maintain clear and sharp lines of demarcation. There is only one state—admittedly an unusual state, but not one that can be stigmatized as pathological—in which it does not do this. At the height of being in love, the boundary between ego and object threatens to melt away. Against all the evidence of the senses, a man who is in love declares that "I" and "you" are one, and is prepared to behave as if it were a fact.

Freud's language lacks the poetry his insight demands, but his concession is touched with a persuasive honesty. This is a tribute to the wisdom of the heart by one of the great stoical philosophers. Ecopsychology would enlarge that insight, letting it reach beyond our social relations to embrace all we have learned of the intricate bond that exists between ourselves and the planet that has given us life. We need only follow where science itself leads us, into the depths of matter and the far reaches of space. Somewhere within this emerging vision of cosmic wholeness lies a new, ecologically based conception of sanity. ■

THEODORE ROSZAK *is Professor of History at California State University, Hayward. His study of ecopsychology,* The Voice of the Earth *(Simon & Schuster, 1992), will be reissued as a Touchstone paperback this spring.*

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Their Mother's Keepers

Continued from page 57

suits Washington's purposes—in the 1960s and '70s, for instance, when it failed to give tribes the same powers as the states for pollution control. The treaties that declared the tribes "sovereign" also made them virtual wards of the federal government, entitled to handouts. Cheap food commodities were supposed compensation for the taking of the vast Indian lands and the destruction of tribal livelihoods; cynics said it was easier to feed the Indians than to fight them. Having been pushed onto the country's poorest land, Indians are still vitally dependent on those handouts, so their sovereignty is a sometimes thing, negotiable at every turn.

Sovereignty, of course, means different things to different people. To waste-disposal companies, for example, it means frontier-style freedom from environmental controls, because the states have no jurisdiction over waste dumps on reservations. And since the BIA issues the permits, the EPA has no role in monitoring, regulating, or enforcing environmental standards. Consequently, dozens of companies have sniffed opportunities in recent years, and have approached tribal councils with waste-disposal projects. A few, as at Salt River and Gila River in Arizona, are already in business. Some have been turned down, and others are still working their way through tribal governments.

An extreme version of this approach is taking place on the tiny Lower Brule reservation, a geographic and political entity of 2,000 Teton Lakota 70 miles northeast of Pine Ridge. At present, Lower Brule's only economic assets are a gambling casino of dubious financial health and a tribally owned farm offering seasonal employment. The chairman of the tribal council, Michael Jandreau, wants to accept an offer for as much as $4.5 million a year from a Denver-based garbage company called South Dakota Disposal Systems. What SDDS wants to buy isn't Indian land, but Indian sovereignty.

The company owns a large property some 200 miles away in the southwest corner of the state, where it plans a huge landfill that would bring trainloads of municipal trash from as far away as Chicago. South Dakota environmentalists, however, keep using state courts and referenda to block the scheme. So SDDS wants to sell the land to Lower Brule for one dollar: presto, instant Indian land. "If we can't operate in the jurisdiction of the state, we would add it to reservation land and then operate under Indian jurisdiction," SDDS president Hunter Swanson told reporters last year.

"We're in a tight spot, and SDDS is offering a way out," says tribal chairman Jandreau, scratching his balding head and frowning during a break from a council meeting. "It means money for the tribe. It means a few jobs. And it's far from our reservation." Sovereignty to him is a valuable commodity the tribe can sell for cash.

But in a small, government-built house over the next rise, Ellen Long Turkey Wright is plotting the opposition, and sovereignty is her battle cry. Wright is a classic Indian beauty, a slender, 42-year-old grandmother with chocolate eyes, a thick black braid, and a tiny tattoo, a keepsake of her wilder days. She doesn't care how far away the dump is; she can think of lots of reasons a huge landfill would be bad for her neighbors' health, bad for groundwater, and an affront to the breast of the Mother.

"Uncle Sam says, 'It's a good thing we saved a little land for all these Indians so we have a place to take a dump,'" Wright jokes above the drone of a racketing television and the competing din of traditional drumming and chanting from a boombox wedged onto the kitchen counter behind her. "But we're sovereign nations, and we don't have to take any shit we don't want." While Wright fumes, a Columbus reenactment—the landing of a ship in New York Harbor—is unfurling on TV, with a band playing "God Bless America." She glances once, rolls her eyes, and laughs.

To Wright, sovereignty means the tribe doesn't have to accept the SDDS dump. A tribal council can still say no to anybody, she says with a wink, "ARCO, Mobil Oil, or even the Great White Father."

The Great White Father, in the form of the U.S. Department of Energy, is behind yet another waste proposal at Lower Brule. The idea is to stash spent radioactive fuel from the nation's nuclear power plants in temporary aboveground buildings for at least 40 years, until the permanent site planned for Yucca Mountain, Nevada, is finished. Like 14 others across the West, the Lower Brule tribal council took the first step, applying to the DOE last March for a $100,000 grant to "study" the possibility of storing the spent fuel rods. To activists like Wright, the grants are a combination of bribe and trap: once they've taken that money, she worries, it will be hard for the tribes to tell the DOE to take a hike. "Are we supposed to believe that the poorest communities in the country are equipped to handle nuclear wastes?" asks Wright, who helped found the People for Mother Earth Coalition to demonstrate against the project. (With a perfectly straight face, the Bush administration's chief negotiator, David H. LeRoy, told the December 1991 meeting of the National Congress of American Indians that Indians' reverence for nature and "timeless wisdom" in land use make them the ideal custodians of spent fuel rods.)

Dissident members from the 15 tribes whose councils applied for the DOE grants met in Albuquerque last May and formed the Native American Energy Network to coordinate opposition to storing nuclear wastes on Indian lands. The Yale, Oklahoma–based organization has already convinced several tribal councils to cancel applications; the Sac and Fox tribal chairman even returned a DOE check his Oklahoma tribe had already received.

The lesson for Indian traditionalists is that they don't have to take on the entire Department of Energy or huge and powerful companies like SDDS; they only have to sway their own tribal council members, people who, despite assimilationist educations and often gung-ho development attitudes, grew up with grandmothers who remembered the days of Wounded Knee and Sitting Bull.

Council members who aren't sensitive to the traditionalists don't last long in tribal politics, says Deborah Rogers, an ecologist with the Technical Information Project in Rapid City, who has worked with many of the Lakota tribes. Tribal councils may move fast and quietly, she says, but "they're perfectly comfortable reversing a decision if the people get up in arms. I've seen it happen time and again."

For example, one of the most notorious waste agreements ever signed was a 1991 contract between the Rosebud Lakota tribal council and O&G Industries Inc., a Connecticut waste firm, that forbade the tribe ever to create regulations that would govern the project. Under pressure from the traditionalist Good Road Coalition, the tribal coun-

cil eventually canceled the contract, leaving the company sputtering mad. The same thing happened at Pine Ridge, where Koenen and the Native Resource Coalition got the council to reverse approval of a waste dump from an O&G subsidiary. At the Hualapai Reservation, dissidents used the vote, the tribal courts, and neighborly arm-twisting to change their council's position on uranium mining.

This process contrasts, Rogers says, with non-Indian city and county governments, which often ask for public comment before signing onto a project, but then ignore it and make unpopular decisions that can't be reversed. "As an environmentalist," she says, "I'd rather take my chances on a reservation."

When a tribe courts dirty industry, the temptation for outside environmentalists is to try and stop it by whatever legal means possible. But that has sometimes meant running afoul of Indian sovereignty and jeopardizing long-term chances for a healthy alliance. The Campo Band of Indians near San Diego, for instance, have hazardous-waste-disposal standards that are stricter than those of the state of California. Yet when the Campos planned a landfill to accept wastes from San Diego, environmentalists joined the state in attacking their sovereignty. "Environmentalists need some education on that," says George Coling, the Sierra Club's Great Lakes specialist, who works closely with Indian activists. "You have to respect tribal sovereignty and then pressure the hell out of the tribal council to do the right thing."

Indian environmental activists work under strains outsiders don't face and often can't appreciate. With unemployment as high as 85 percent on some reservations, government jobs are often the only ones available; antagonize some tribal councils and you might find yourself, in a drumbeat, back on the welfare rolls. Ellen Wright lost her job as head of the Lower Brule Elderly Nutrition Center when she joined the elders in a sit-in to protest their expulsion from the senior center to make way for the Golden Buffalo Casino and Bar. The other three leaders of the Peo-

ple for Mother Earth Coalition still work for the tribal government, but on the eve of a meeting I'd come 800 miles to attend—a meeting to organize opposition to nuclear wastes—the tribal council abruptly sent them off to "workshops" in Omaha. The meeting was canceled.

When I first arrived at Lower Brule, the trunk of my car was filled with documents about mines and oil drilling and nuclear wastes. I was on the trail of environmental problems and impatient for information. But conversations kept shifting to terrain I hadn't seriously considered before entering Indian Country—to Mother Earth rituals, treaty violations, and debates over the meaning of sovereignty. In some ways, to call someone like Wright or Koenen or Bravo an "environmental activist" is to miss the point. Wright's kitchen table is strewn with dog-eared documents of the People for Mother Earth Coalition that address a horrifying number of affronts to the Teton Lakota's physical and spiritual health: rotten health care, alcohol sales on the reservation (where alcohol-related illnesses and accidents are pandemic), and the need for better Lakota-language instruction in schools. Koenen can barely finish a conversation about zeolite without being sidetracked by a water project he believes will rip off the Indians to benefit white farmers. Pressure to accept a dump is inextricably bound up with pressure to give up tribal fishing and hunting rights; a discussion of "clean development" segues into the need for a better senior-citizen nutrition program.

It takes a long time to get anything done on a reservation. The roads don't go where you want to go. The phones can't be relied on. The government is suspicious (someone had to *leak* the Pine Ridge Reservation's mining code to me). And conversations meander as fitfully as the White River. But just when my frustration was peaking on Lower Brule, Wright told me of a Lakota prophecy from the time of the Indian Wars: that it would take the tribe seven generations to get its land back. "He's the seventh generation," she said, nodding at a grandson banging a wooden spoon on a box. If the Lakota could wait that long for redemption, I could wait another afternoon to get the facts I was after.

Still, the maddening holism of Indian environmentalism can leave an outsider's head spinning. It makes it difficult for the Indians, too. "It's hard for us to understand the federal environmental laws and how to work them," says Lena Bravo. "It's hard for us to even comprehend that there are different laws for religion, for the environment, and for the economy." On the reservations, she says, it's all one struggle—for ethnic pride, good health, religious freedom, and a clean environment. To work with the Indians, she told me, you have to know that. ■

Margaret Knox *is a freelance writer in Missoula, Montana.*

► ***For more information, see "Resources," p. 106.***

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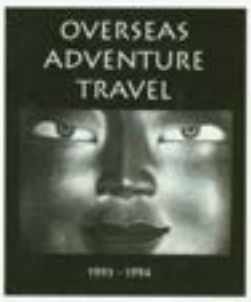

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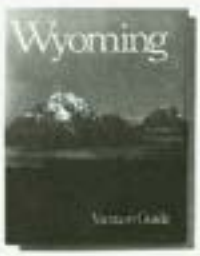

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REVIEWS

KATHLEEN COURRIER

The Diversity of Life
E. O. Wilson
Harvard University Press; $29.95

How many species exist in the world today? What is Earth's biological capacity? Which "keystone species" hold ecosystems together? Big Questions like these continue to baffle scientists, but if anyone can come close to answering them, it's Harvard biologist and Pulitzer Prize–winner E. O. Wilson. He has spent decades studying biodiversity—ants in particular and the biosphere in general—and here he expertly weaves together various strands of knowledge from many fields. *The Diversity of Life* may well be the ultimate popular text for those who want to understand what genetics, ecology, and natural history have to say about the origin, evolution, extinction, and possible salvation of species.

Mindful of the many unknowns, Wilson argues that roughly a fifth of all species are in danger of becoming extinct over the next three decades, with worse to follow if human beings don't cut back on their reproduction. Perhaps because he believes all hands are needed on deck to forestall an extinction spasm of dinosaurian proportions, Wilson doesn't come down hard on the corporations and governments that have allowed the crisis to build. Rather than assign blame, he urges countries to survey their fauna and flora, create biological wealth through chemical prospecting, find green jobs for the world's poor, preserve remaining biodiversity, and nurse injured wildlands back to health.

Will our love of nature—and the prospect of losing economically valuable species—be enough to convince us to work against the tide of mass extinction, as Wilson hopes? Considering the United States' refusal to sign the international convention on biological diversity at last year's Earth Summit, this may prove the biggest question of all.

Where the Bluebird Sings to the Lemonade Spring
Wallace Stegner
Random House; $21

Wallace Stegner's compass has always pointed due West. Born and reared there, the renowned novelist, essayist, and teacher left for just long enough to convince himself that the West was where he belonged. Yet in these recent essays on his own life, western culture, and regional writers, Stegner (now in his 80s) is still struggling to define the place he says has all but entered his veins.

About what the West is not, Stegner has few doubts. He bristles at Easterners who think everyone in the West is a cowboy, and at Western poseurs who act out others' daydreams. The mythically freighted landscapes and stereotypes of Zane Grey and Louis L'Amour do touch on what Stegner considers deep truths about the real West—especially the role of the region's great empty spaces as the proving grounds of self-reliance and the driving force behind American hypermobility. But what the myths miss completely, Stegner warns, is the ground truth that in the "incorrigibly arid" West, any society that breaks nature's rules won't live to tell about it.

Stegner's own father, a small-time entrepreneur who believed the myths, and who did more than his share of environmental damage to western lands, strides through these pages, no larger or kinder than in life. But Stegner's spiritual kin are the writers who have not romanticized the West, and thus have not sold it short.

Green Delusions: An Environmentalist Critique of Radical Environmentalism
Martin W. Lewis
Duke University Press; $24.95

Fearing that the environmental movement is veering into the backwaters of extremism (with more than a little help from out-of-touch neo-Marxist academics), Martin W. Lewis has attempted to define the movement's proper course. He identifies two types of environmentalist, the "Promethean" (whom he praises) and the "Arcadian" (whom he attacks). As he sees it, Prometheans embrace technological progress, stepwise political reform, "guided capitalism," city life enriched by excursions into protected wilderness areas, and people-centered economic development. Arcadians, in contrast, find salvation in simple country living, barter economies, "biocentrism," pantheism, and the politics of subversion.

Lewis fears that Arcadian influence is increasing, ruining the credibility of mainstream environmentalists. But he greatly exaggerates the political might of what he considers the "eco-radical" fringe. He also occasionally stoops to conquer, going after easy targets such as those who defend the right to life of the smallpox virus. And in quoting some mostly reasonable people out of context, Lewis may end up offending more people than he convinces.

Still, his book gives voice to provocative notions: that economic growth will do the environment more good than harm; that the best way to preserve nature is to live apart from it in fairly large cities, letting vestiges of wilderness be; that, rather than engage in "baby-bashing," those who worry about population growth in the United

States should focus on immigration; that what eco-radicals share with right-wing capitalists is blind faith in a semi-divine force (whether nature or the market) that can bring about Utopia. Lewis is sure to annoy Arcadians with his contention that "the very foundation of eco-radical thought lies in a gross distortion of human history."

Under Western Skies: Nature and History in the American West
Donald Worster
Oxford; $27.50

Historians must shake off the blinders of heroic myth and construct a new history of the Old West, maintains historian Donald Worster. In this collection of essays Worster bids others in his field to grapple with the mighty forces of racism, classism, and anti-environmentalism as they have shaped western North America.

Two essays in particular reveal how a commitment to conservation can help historians address serious public issues. In one, Worster argues that nothing has done more to consecrate the Black Hills for the Lakota than the century-spanning legal battle over who owns the land. "Saving the Black Hills from energy companies, tourism, and industrial pollution," he writes, is also "saving the Lakota from their own pathological life on the reservation"—the unemployment, poverty, and alcoholism born of political marginalization. The point is pivotal. Worster sees cultural salvation in the Lakota's religion of place, which he considers a legitimate "land use" and another reason (besides compelling legal ones) for the federal government to return the Black Hills to their native inhabitants.

In another essay Worster holds up the Inupiat of Alaska as a textbook case of what happens to a traditional culture when it collides with a reinvented world awash in fossil fuels. He shows how, under the influence of oil, the Inupiat's worldview—formerly a fatalism born of ambivalence about their place in the "scrimpy northern world of nature"—has given way to "trust in rational greed as the ideal basis of society." If this mindset prevails, repeats of such ecological disasters as the oil spill in Alaska's Prince William Sound are all but guaranteed.

Going Back to Bisbee
Richard Shelton
University of Arizona Press; $15.95, paper

It takes only two hours or so to drive from Tucson to Bisbee, Arizona. But in Blue Boy, poet Richard Shelton's beat-up van, the journey is deliciously slow. Every milepost on the highways that snake from the desert metropolis to the former mining town reminds Shelton of someone or something in southeastern Arizona worth knowing. Shelton's first love is the desert itself, and he misses no chance to expound on such mysteries as the Sonoran monsoons or the lifespan of the tarantula (25 years!). Then there is Bisbee, a town so weathered and rav-

aged by floods and fires that the 1975 shutdown of the copper mines that had been its economic lifeblood for a century made townspeople shrug more than roar. Shelton chronicles the lives of Bisbee's tenacious denizens—most notably Ida Power, local grand dame and mastermind of the plan to resurrect the town as an arts center.

Going Back to Bisbee is a nostalgia trip. But the author's self-deprecating humor (and a contagious fascination with the lawless acts and outlandish dreams that have shaped local history) hold the maudlin excesses of memory in check. So does low-key erudition: Shelton's occasional silver-tongue-in-cheek ruminations on language are reason enough to climb into Blue Boy's passenger seat.

BRIEFLY NOTED

A thoroughgoing account of the tangible causes of Earth's ecological crisis—population growth, rampant consumption, and increasingly invasive and disruptive technologies—is given by Paul Harrison in ***The Third Revolution: Environment, Population, and a Sustainable World*** (I. B. Tauris & Co., Ltd., London; distributed in North America by St. Martin's Press; $35). The book was produced in association with the World Wide Fund for Nature. . . . Theologian Rosemary Radford Ruether searches for the spiritual roots of the environmental crisis in ***Gaia and God: An Ecofeminist Theology of Earth Healing*** (Harper San Francisco; $22). In this scholarly but accessible work, Ruether sifts through the legacy of Christian and Western cultural heritage to find "usable ideas" that might help us toward a healing relation to each other and to the earth. . . . For spiritual and ecological insight from an Oglala Sioux perspective, read Ed McGaa's ***Rainbow Tribe: Ordinary People Journeying on the Red Road*** (Harper San Francisco; $15, paper). McGaa (who goes by the name Eagle Man) maintains that if Christians, in particular, do not face up to the harm they have done to the world and especially to Indians, "the environmental salvation of the planet is doomed." . . . Editors Steven C. Rockefeller and John C. Elder offer other theological takes on the ecological crisis in ***Spirit and Nature: Why the Environment Is a Religious Issue*** (Beacon Press; $30, cloth; $16, paper). Several contributors offer up their views, drawing from Buddhist, Christian, Islamic, Jewish, Native American, and liberal democratic traditions. . . . As everyone knows, the Sierra Club is run by volunteers—a class not to be confused with amateurs. Susan D. Merrow, the Club's 41st President, draws the reader into the complex and demanding day-to-day world of the organization's top volunteer in an autobiographical account of her year in office, ***One for the Earth: Journal of a Sierra Club President*** (Sagamore Publishing; $19.95). Her challenge from May 1990 to May 1991 was both to make "the whole sprawling mechanism that is the Sierra Club function smoothly" and to grapple with some of the toughest environ-

mental questions ever to confront the nation or the world—and to do all this while fully engaged as wife and mother in a close-knit Connecticut family. . . . "An illusion of plenty" is how Worldwatch Institute researcher Sandra Postel describes the apparent abundance of water in such arid-land metropolitan areas as Phoenix and Los Angeles. "The damming, diverting, and pumping of water from near and far to make the city not only livable but lush," writes Postel in ***Last Oasis: Facing Water Scarcity*** (W. W. Norton & Company; $9.95, paper), mask the enormous environmental damage done as rivers, lakes, wetlands, and groundwater are sucked dry. She discusses ways of utilizing scarce water more efficiently, and of revamping the pricing and marketing of water to make conservation more attractive. . . . In ***Every Person's Little Book of Plutonium*** (Rising Tide Press, P.O. Box 6136, Santa Fe, New Mexico; $10.95 plus $2.50 for shipping and handling, paper), Stanley Berne enumerates the evils of nuclear power and unmasks "the devil of radiation." The book is packed with disturbing, at times harrowing information: Berne, who in World War II was in Japan as a member of the U.S. Army of Occupation, offers up firsthand descriptions of the suffering he witnessed in Hiroshima in the immediate aftermath of its bombing. . . . The environmental movement has accumulated a sometimes bewildering variety of terminologies, pet theories, names, lists, and data that are peculiar to it. For a better understanding of what environmentalists are talking about in their more obscure moments, consult ***The Green Encyclopedia: An A-to-Z Sourcebook of Environmental Concerns—and Solutions*** by Irene Franck and David Brownstone (Prentice Hall; $35, cloth; $20, paper). With this on your shelf, you'll never be far from knowing the scientific name of a certain endangered species, or the meaning of FLPMA and RCRA. . . . Speaking of species, there'd be fewer left across the nation if Congress hadn't set aside special preserves for many of them. As it happens, these refuges make good places for

hiking, birdwatching, and the like. To help people enjoy them, Laura and William Riley have revised and expanded their ***Guide to the National Wildlife Refuges*** (Macmillan; $40, and Collier Books; $16, paper). From Alaska to Maine to the tip of Florida, it's as complete a reference to all 475 or so refuges as you're likely to encounter. ***—Mark Mardon***

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Cougar: Ghost of the Rockies
Karen McCall and Jim Dutcher
Foreword by Wallace Stegner
Sierra Club Books; $30

A cougar kitten's taste for meat (left) is established by its eighth week of life—though the youngster may not be weaned for up to six months. This extended period of dependence, by limiting a female's reproductive cycles, serves as a natural brake on overpopulation.

A less natural constraint are the hunters who slaughter 1,800 cougars each year in the western United States. They justify their kills by appealing to an atavistic fear of predators, even though the animals pose little danger to humans or livestock. "Deliberate war on any species diminishes, endangers, and brutalizes us," writes Wallace Stegner in his foreword to this account of a year in the life of a cougar family. Will the cougar's right to life be recognized before extinction overtakes it?

READINGS

From ***Plundering Paradise: People, Power, and the Struggle for the Environment in the Philippines*** *by Robin Broad, with John Cavanagh (University of California Press, 1993). Reprinted with permission.*

We travel to the Philippines to learn what has become of one of the world's most bountiful paradises, a country that recently boasted spectacular tropical rainforests and coral reefs teeming with colorful exotic fish.

It is the children of the Philippines we notice immediately as we drive from Manila's Benigno Aquino International Airport into the city. And it is their images that haunt us most when we leave. As we wend our way through the narrow, noisy, fetid streets, we see children everywhere. Children bathe in public faucets. Nude and nearly nude toddlers scamper around. Brothers and sisters little older than the babies chase after their younger siblings, scooping them up and carrying them back to the small shacks that line so many of Manila's streets, shacks built of old wood planks or pieces of cardboard or scraps of indefinable origin.

The children's images haunt us because so many of them are doing what children should not have to do: they are at work. The stoplights at Manila's grimy intersections have become a popular children's workplace. At a minute-long red light, children swarm onto the road. A small boy sells cigarettes by the stick: Philip Morris, Marlboro, and the rougher local brands Champion and Hope.

He carries them in a homemade wooden box, almost as big as he, that has other small compartments for the Wrigley's chewing gum and menthol candies he also sells by the piece. He and a handful of other boys laden with candy, cigarettes, or a few of the country's two-dozen-odd newspapers race from vehicle to vehicle to hawk their wares at each window.

Young girls hawk wreaths of fragrant *sampaguita* flowers, to be hung from rearview mirrors in an attempt to camouflage the suffocating fumes of low-

grade diesel fuel: three wreaths for 5 pesos. "Please, ma'am, I'm tired," becomes the sad plea late at night as the traffic snarl slows and the price goes down. "Two more sales and I can go home."

From ***A Full Life in a Small Place and Other Essays from a Desert Garden*** *by Janice Emily Bowers (The University of Arizona Press, 1993).*

Sometimes when I sprinkle my garden, I remember that the water coming out of the hose probably fell as raindrops ten thousand years ago. Back then, conifer woodlands grew where cactus thrives now and annual rainfall was twice or even three times as great as today, great enough, anyway, that permanent streams flowed where we have only sandy washes now. This land was then an active participant in the hydrological cycle. Rivers like the Salt and the Gila flowed all the way to the Colorado River, which in turn debouched into the Gulf of California, which in turned boiled up clouds that delivered rain far into the interior, enough rain to saturate the aquifers—porous beds of sandstone, silt, and conglomerate—that underlie the city where I live.

If this ancient water source were visible as mineralized fossils on the land surface, we would probably declare it a national park, set it aside for veneration and admiration. Instead we draw upon it as casually as we draw upon the atmosphere for the oxygen we breathe: 150 gallons per person per day on the average. We choose to forget these facts: that we live in a desert, that a good year brings only twelve inches of rain, that generous amounts of water percolate into the aquifer only in years of above-average rainfall, that there are many more bad years than good.

Most of the recharge to the Tucson basin comes from streamflow: after storms, the washes run for an hour or two, then dry up. Some of this water evaporates, some runs out of the basin, some is used by plants and some—82,000 acre-feet a year—percolates into the water table. Until the 1950s, our withdrawals from the aquifer approximately equalled the recharge from natural rainfall. Now our three hundred city wells withdraw 300,000 acre-feet a year, nearly four times as much as nature recharges. We know where our water comes from, all right, but evidently we don't care.

When you've hauled up a thirty-pound bucket from a fifty-foot-deep shaft or walked sixteen miles every day to the nearest source of water or constructed a five-mile-long *qanat* one shovelful of dirt at a time, you do care. There's no question then of where your water comes from, every drop of it, or of exactly what its value is. This is the stuff of poetry made visible. Try as I might, I can see precious little poetry connected with city well number four, which is all machinery and electricity and pressurization. Whatever poetry exists is hidden far beneath my feet, way down where the groundwater silently flows in secret channels.

From ***Desert Time: A Journey Through the American Southwest*** *by Diana Kappel-Smith (Little, Brown, 1992). Reprinted with permission.*

There is a species of fish whose breeding habitat is the size of a desktop. A desktop isn't much space in the world. A schoolroom-sized desk, too, the kind with the chair attached and a shelf underneath where you tuck your books. The habitat is a shelf, really; a lucky triangular bit of stone jutting just so, with two feet or less of lucky water over it. The shelf looks yellow-green with algae and has coppery blotches that may be algae also. One has to look very hard to see that there are fish there: inch-long dark shapes, sometimes curved, sometimes moving.

The fish are Devil's Hole pupfish and this is Devil's Hole. Beyond their shallow habitat is the hole itself, a kind of underwater cave that is, so far, immeasurably deep. Scuba divers have gone three hundred feet down in there and never found bottom. Two scuba divers got lost down there years ago and were never found themselves.

The opening of the hole is fifty feet long and ten feet wide, and the shelf is on one side of it. Otherwise, it goes down. A little way down you can go sideways to a cave, not far from the opening, called Brown's Room, filled half with air and half with water and utterly dark. The fish do go down as far as eighty feet themselves, so the scuba people say; why, no one knows. Only the shallow shelf seems to be useful for most feeding or mating, and beyond that shelf the rock curves out of sight into the depths of the hole like the fundus of a toilet bowl.

In midday that deep water is sapphire netted with black, a clear impossible blue. It lies in a deep setting of gray rock. It has the cool lucency of a jewel. At one edge is that triangular patch the size of a desk, like an imperfection at the edge of the jewel.

All of this—shelf and hole—lies at the bottom of a deep, nearly sheer cleft in the rock and you'd never see it at all unless you came close enough to nearly fall in. I fooled around with this, trying to tell how close you'd have to be to see

something here besides the gray stones rising at the base of a hill: twenty feet, fifteen, ten, five . . . if a fence weren't here you'd have to stop yourself teetering on the brink before you'd look down and see that color lying down there, and then you'd blink, not understanding what it was, for a minute or two.

The water renews itself all the time. It may come from the Spring Mountains forty miles off, or from as far as Pahranagat [National Wildlife Refuge]; from a hundred miles or more, all underground. This is fossil water. What it makes possible here is a strange archipelago of life.

From ***The Crystal Desert: Summers in Antarctica*** *by David G. Campbell (Houghton Mifflin, 1992). Reprinted with permission of the publisher. Copyright © 1992 by David G. Campbell.*

It is snow-hailing this morning when I make my first scuba dive into Admiralty Bay. At dawn the bay was so still and so profoundly blue that sea and sky seemed to merge on the horizon. The bay grew snow-capped mountains and the sky became liquid. But now, a few hours later, a front of dirty clouds has passed over King George Island. No doubt it is the long spiral finger of a distant cyclonic storm. But no matter; the front brought no wind and the bay remains tranquil. It is a wonderful morning for a swim.

Scuba diving in the Antarctic is the closest thing on Earth to walking in space. Today the water temperature in Admiralty Bay is 0.4 degrees C., so cold that an unprotected diver would lose consciousness and die after only a few minutes' exposure. I don several layers of woolen underwear and socks, a one-piece neoprene dry suit, a hood, booties, and three-fingered mittens. The suits are hung from the rafters of the generator room to dry. But my suit is not dry: its interior is still damp and slightly fetid from the perspiration of the previous user. Sitting on the bench, I slide my legs inside. Then my arms and head. The suit is so snug that I practically strangle just pushing my head through the neck cuff. I walk as stiff-legged as an insect. The hood muffles my hearing and I unconsciously shout like a partially deaf man. All of my body heat is reflected back at me, and it is a sauna inside; my armpits become damp, and my forehead, which is not covered by the rubber hood, drips with perspiration. Immediately I understand the discomfort that a seal or a penguin, insulated by blubber, must feel on a warm day.

From ***The Temple of the Jaguar: Travels in the Yucatan*** *by Donald G. Schueler (Sierra Club Books, 1993). Reprinted with permission.*

Behind the Temple of the Inscriptions at Palenque, a trail climbs the steep slope to the unreclaimed Temple of the Jaguars. If you follow it, you can pretend you are entering a serious tropical jungle—the sort of place where Tarzan or Rima the Bird Girl might swing by at any moment. The air is green and dripping wet, and the trees appear to be growing down instead of up. Their trunks flange out into swirled pleats as they swoop earthward; and when they touch ground they divide and subdivide into an elaborate network of exposed roots that forage hungrily across the sunless forest floor. Everywhere, vines thick as a freighter's mooring cables are busy tying things up. Without them, all this tangled scenery would surely fall apart.

Senor Morales says it's falling apart anyway. He is partial to apocalyptic utterances, but in this case he is probably right. The jungle on this little mountain is protected because it is part of the Palenque archaeological site, but it is only a measly fragment of the wilderness that covered most of Chiapas a couple of decades ago. Now, if you overlook the region from the air, you get an eyeful of other little mountains like this one stretching back into the Chiapas hinterlands; and on the impossibly steep slopes of almost all of them grow impossible crops of maize. Since jungles do not do well as token bits and pieces of their former selves, the long-term prospects for this small remnant are not promising.

For now, however, it not only looks

like a proper jungle, it sounds like one.

Evening in the tropics come on in a hurry—one of the few things that does—and this is the favorite hour for black howler monkeys to engage in group expression. The bunch that are sounding off near me are higher up on the slope, on the other side of the ravine. Although the treetop foliage bends and sways under the considerable weight of their passage, they stay out of sight.

They are not called howler monkeys for nothing. On occasion their stupendous bellowing has been known to send unforewarned tourists running for their lives. Once one recognizes the source, however, all that hullabaloo becomes the stuff of comedy. By now I have heard this bunch hooting and hollering so often that I have decided I even know what they are saying—things like "Stop hoggin' that damn branch," or "Have any of you made up your minds where we're gonna spend the night?" They are like a large, rowdy family in a tenement flat; they learn in the cradle that if you wanna be heard you gotta speak up.

For a moment I find myself wishing I were up there in the treetops with them, yelling my head off. But quickly I suppress the thought. I have become self-conscious about this little quirk I have lately acquired, this tendency to wish I were almost anyone, anything, other than myself.

From ***The Secret Forest*** *by Charles Bowden (University of New Mexico Press, 1993). Reprinted with permission.*

The woman puts a venison stew before me on a chipped old plate; one of the men cracks the top off a beer as the night seeps off the mountain into the village. A naked light bulb dangles over my head under the *ramada* and everyone is smiling. It has been a bad year. The rains have been treacherous. First they were late and the men had to wait to plant the corn in their *milpas*. Then, when the storms finally came they dropped scant moisture. Finally, in August, when the stalks had struggled against the sun and were beginning to form tiny ears, the storms returned

with a strong heart, the skies drained down into the land, the dry arroyos filled and the water spilled out of the banks, and the corn, the sacred corn, began to rot in the fields. Ah, the corn, it is easy to think of it this night as the woman, Ramona, the mother of so many, who puts a plate of fresh tortillas before me. She has ground the kernels on her stone metate, patted the wafers out by hand, cooked them over a wood fire. She is very good at this, but who would not be after say forty years of rising at 3:30 in the morning to prepare them for the men going into the fields and the forest.

Everyone is happy tonight. I can hear the pig snuffling about at the edge of the group, hoping for slops. I can see the thin dogs out of the corner of my eye, skulking behind the legs of the men clumped in circles of soft conversations in the swept dirt yard. Minerva is seventeen tonight and she is in full bloom. What do I know of her? She came to my house in town once to use the shower before a big dance. She came to my house once with a cactus thorn in her eye and I drove her thirty miles to a doctor. She always smiles and radiates an appetite for life that thrills boys and spooks her guardians. That is what I know. Her uncles, five of whom still live in the house, pool their money so that she can go to dances and meet a man who will take her away and feed her. They tell me this matter-of-factly. Everything here is matter-of-fact and all the facts sound like fantasy. The forest is the world of the uncles and they speak of water demons, birds they call *carbuncos* who beam blue lights from their heads, dogs who live in the water, trees that bear strange fruit, an old woman who lives with military macaws, a giant snake that camps on the edge of the village. They talk of killings, of births, of loves, of feuds. That is why I am here, an accidental captive in their net. And the net is simply life. For tonight, I have brought a lacy tube top for Minerva as a gift, a wrapping to help her in her hunts at the dances. This article has made her mother Ramona very happy. I think she will pray for me. ■

SIERRA NOTES

Four major conservation priorities for 1993–94 have been established by the Sierra Club Board of Directors. During this period, the organization's attention and resources will be dedicated to meeting these objectives:

- Preserving and restoring America's wild places through public-land-management reform.
- Enhancing federal programs to support biological diversity and preserve endangered species.
- Strengthening federal pollution statutes and regulations.
- Stabilizing the global population.

In addition, the Board has authorized a special campaign to reduce the consumption of fossil fuels by automobiles and other motor vehicles.

Reminder: now's the time to vote for Sierra Club directors. This year there are nine candidates for the five open seats on the 15-member Board of Directors. We encourage you, if you haven't already done so, to read each candidate's profile and statement of purpose, and cast your vote for those whom you feel will best guide the Club for the next three years. All completed ballots must be received by April 10. Members who do not yet have their ballots in hand should contact the Sierra Club Office of Volunteer Development, 730 Polk St., San Francisco, CA 94109; (415) 923-5681, no later than March 20.

Three new Sierra Club chapters have formed in the northeastern United States, bringing the total number of chapters to 61. New Hampshire (2,535 members), Maine (1,966 members), and Rhode Island (1,534 members) have split off from the regional New England Chapter. Their goal in seeking autonomy is to function with greater efficiency. The New England Chapter will continue to serve the 13,500 Sierra Club members in Vermont and Massachusetts.

The chairpersons selected to lead the new Club chapters are Sue Hale for New Hampshire, Elizabeth Palter for Rhode Island, and John Boomer for Maine.

Endangered Species and Their Habitats is the latest Sierra Club publication in a series focusing on the United States' public lands and the work of conservationists to protect plants and animals. The 20-page booklet emphasizes the need to preserve natural areas in order to prevent species extinctions; it also includes a list of threatened and endangered species in the United States and Canada. Copies are $3 each for Sierra Club members ($4 for nonmembers) plus $2 postage and handling from Sierra Club, Dept. SA, P.O. Box 7959, San Francisco, CA 94120-7959.

Yosemite National Park concessions, long under the controversial control of Yosemite Park and Curry Company, were turned over to a new contractor last December by the National Park Service. The selection by the NPS of Delaware North Company to manage Yosemite's concessions business is a setback for the conservation movement's efforts in the park, says Sierra Club Vice-President Edgar Wayburn.

Among the bidders for the contract, only YRT Services Corporation, a company set up by the Yosemite Restoration Trust, promised to offer not only high-quality services, but environmental programs and a reduced commercial tone in its concession operations. Wayburn, who serves on the trust's board, says the bidding marked the first time a conservation-minded entity has been considered for such a concession. Environmentalists had long been critical of Curry Co. for its failure to implement fully the General Management Plan for Yosemite, which calls for cutting back on automobile travel and commercial enterprises in the park. Wayburn questions whether the new management, whose experience is in

concessions at airports and dog-racing tracks, will make great headway in instituting the plan.

The Gas-Guzzler Campaign—a national grassroots effort sponsored by consumer, health, community-service, and environmental organizations including the Sierra Club—wants people to take action to limit the impacts of automobiles. The campaign urges consumers to buy only fuel-efficient cars, to limit their car use and employ alternative forms of transportation, and to let Congress and the nation's automakers know they prefer less-polluting vehicles powered by the sun, electricity, or alternative fuels such as ethanol or natural gas.

For more information about the Gas-Guzzler Campaign, contact the Energy Efficiency Education Project, 1333 H St., N.W., Suite 700, Washington, DC 20005-4707.

Our Vanishing Forests is a documentary video focusing on the logging controversy in the Pacific Northwest. Videomaker Arlen Sloberto explores the complex issue in part by interviewing several key players, among them Jeff DeBonis, founder of the Association of Forest Service Employees for Environmental Ethics.

Copies of *Our Vanishing Forests* are $29.95 each for individuals and nonprofit organizations, $59.95 each for libraries and for-profit institutions, available from Public Interest Video (PIV), 4704 Overbrook Rd., Bethesda, MD 20816. Include $3.95 for shipping with each order. For more information contact PIV at (301) 656-7244.

"Low-level" radioactive waste is highly dangerous, according to *Myth Busters #8*, a recent report on the nuclear industry from the Safe Energy Communication Council (SECC). The "low-level" label is deceptive, the brochure makes clear, because under U.S. government definitions virtually all waste so classified includes high-hazard material from commercial nuclear reactors.

For a copy of the 16-page *Myth Busters #8*, send $4 to SECC, 1717 Massachusetts Ave., N.W., Suite LL215, Washington, DC 20036. For more information about this report, or for a list of other available titles in the Myth Busters series, call the SECC at (202) 483-8491.

Concerned about poisons in household products? Some 253 organizations and agencies in the United States monitor, regulate, and lobby to reduce or eliminate chemical contaminants in retail goods. To help consumers assess the health risks such chemicals pose, a nonprofit environmental research and education institute, INFORM, has produced *Tackling Toxics in Everyday Products: A Directory of Organizations*. This comprehensive report documents the activities of the groups working to control toxics, and includes information on the effects of various chemicals and their burgeoning use in consumer items.

Copies of *Tackling Toxics* are $19.95 each plus $3 postage and handling from INFORM, 381 Park Ave. South, New York, NY 10016-8806. For more information call (212) 689-4040.

The natural areas of Peru are threatened and need our help, says the Peruvian Foundation for the Conservation of Nature (FPCN), a nonprofit organization based in Lima. The foundation notes that Peru's coast, mountains, and rainforests are home to more than 1,700 bird species, some 20,000 plant species, and many rare mammals, all of which are imperiled by mining, oil drilling, hunting, or deforestation.

To become a member of FPCN and support its efforts to preserve Peruvian wildlife, send $25 or more to FPCN, c/o The Nature Conservancy LDA, 1815 N. Lynn, Rosslyn, VA 22209. (For tax-deductible donations in the United States, make checks payable to The Nature Conservancy, Peru Country Program.) Your contribution of $50 or more will entitle you to receive the foundation's quarterly newsletter, *El Condor Pasa*, and a subscription to *South American Explorer*. ■

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▲ Grizzly Bear (Ursus Arctos) foraging in sedges in estuary © John Hyde 1992

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LETTERS

Continued from page 17

incinerator and treatment operators. For example, the Club's Arizona Chapter was involved in closing down the ENSCO incinerator there; the Cumberland Chapter is joining a legal action against the notorious LWD incinerator in Kentucky (mentioned in my article); the Delta Chapter is fighting the Laidlaw treatment facility in Louisiana; the Utah Chapter fought the USPCI incinerator; and Club activists in Pittsburgh have been involved in the fight against the WTI incinerator in East Liverpool, Ohio (also cited in my article).

Early and Weiss argue that the HWTC has frequently supported the Sierra Club's position on "tougher environmental laws." True enough when the laws affected their competition, but they have also opposed tougher environmental laws when these affected their own industry—most notably when the EPA, at the council's prodding, tried to remove North Carolina's authority to regulate its own hazardous waste because that state had the temerity to pass more stringent regulations than EPA's on one of the council's members. The federal court agreed with North Carolina's position, supported by the Sierra Club, and slammed the EPA/HWTC contentions.

In any event, it is silly to argue that Fortuna's name should not be on a list of EPA officials who pass through the revolving door between the agency and the industry it regulates. (Just about everyone else on the list sometimes supports environmental positions.) The shoe fits Richard Fortuna perfectly.

William Sanjour
Alexandria, Virginia

Daniel Weiss responds: *Mr. Sanjour's letter contains several critical omissions and misstatements of fact. First of all, the national Sierra Club is actively pursuing legislation to impose a moratorium on the construction of new garbage and hazardous-waste incinerators. With our support, Representative Peter Kostmayer (D-Pa.) introduced such legislation in the last Congress. The Hazardous Waste Treatment Council*

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did not oppose this bill. Second, the national Club worked closely with Greenpeace and local congressional leaders to halt the startup of the WTI incinerator in Ohio and the USPCI incinerator in Utah. The council worked with Club activists in South Dakota and other states to strictly regulate waste-burning in incinerators and cement kilns. Most ironically, Sanjour ignores the council's fight against the Laidlaw facility (Marine Shale Processors, Inc.) in Louisiana, even though Laidlaw is a member of the HWTC.

Finally, Sanjour asserts that the HWTC "lobbied" Blake Early and me to write to Sierra *in response to his article. Nothing could be further from the truth. We wrote on our own initiative because Richard Fortuna and the council were wrongly smeared with guilt by association in Sanjour's original article. As we stated in our letter, we don't agree with the HWTC on everything. Nonetheless, the council is far more supportive of protecting public health and the environment than the other companies Sanjour mentioned. It is unfortunate that he cannot discern the difference between real and imagined enemies.*

GREAT BY DESIGN

The judges in the 1992 "Ozzie" awards competition sponsored by the industry publication Magazine Design & Production *have recognized* Sierra *for excellence twice this year, presenting Art Director Martha Geering and her staff with the coveted Gold Award for best overall design of a consumer magazine with a circulation of more than 100,000, as well as the Bronze Award for the best redesign of a consumer magazine in the same circulation category.*

CORRECTION

The Art Wolfe photo that appeared on the cover of the Sierra Club Outings Catalog in the January/February issue was misidentified. The caption should have read "Kayak and glacier in Southeast Alaska." The Outing Department regrets the error.

Sierra welcomes letters from readers in response to recently published articles. Letters may be edited due to limitations of space or in the interests of clarity. Write to us at 730 Polk Street, San Francisco, CA 94109.

David Muench Fine Art: SUWA's First Color Poster

David Muench, one of our finest landscape photographers, has donated an image of a slot canyon for use in SUWA's first full color poster. We are grateful to **Patagonia, Inc.** and to **Arpel Graphics** who helped make the production of this 24-inch by 36-inch fine art print possible.

In addition to the regular posters (which we offer for $20 including shipping and handling), we have 200 copies of a special, limited edition, signed by **David Muench** and available for $100 (includes shipping and handling). Please make your check out to SUWA and send your order to:

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Join activists working on issues that concern you. Contact the Campaign Desk, Sierra Club, 730 Polk St., San Francisco, CA 94109; phone (415) 776-2211.

To receive semimonthly updates on the Club's regional, national, and international conservation campaigns, subscribe to the *National News Report*. Request a free sample issue and subscription information from the Campaign Desk at the above address.

AFIELD

"Hearth & Home," page 28

Nontoxic, Natural, and Earthwise by Debra Lynn Dadd (Jeremy P. Tarcher, Inc.; 1990) gives a do-it-yourself recipe for paint remover, as well as several for homemade paints.

Creative Technologies, 14 Witsett St., Greenville, SC 29601, makes the Woodfinisher's Pride line of nontoxic, biodegradable paint and varnish removers.

DEPARTMENTS

PRIORITIES

Environmental Education, page 40

People for the American Way publishes *Right-Wing Watch*, a useful monthly newsletter available for $15 a year, and an annual report, *Attacks on the Freedom to Learn*, for $11.95. To obtain either, write to PAW at 2000 M St., N.W., Suite 400, Washington, DC 20036.

MIT study, page 44

Copies of Stephen M. Meyer's 48-page report, *Environmentalism and Economic Prosperity: Testing the Environmental Impact Hypothesis*, are available for $6 from the Massachusetts Institute of Technology. Send your request to Gina Meyer, MIT, 292 Main St., Room E38-630, Cambridge, MA 02139.

Transit funds, page 48

Sierra Club activists are working on transit issues at the local, state, and national levels. Contact the Campaign Desk (address listed above), or call either Preston Schiller of the Club's Urban Environment Committee at (206) 827-8908 or John Holtzclaw of the Transportation Subcommittee at (415) 776-2211.

Transit Now, which lobbies for light rail, buses, carpools, high-speed rail, and other alternatives to cars and highways, can be contacted at 1317 F St., N.W., Washington, DC 20004; phone (202) 638-0215.

PLACE SETTING

Great Lakes, page 78

The Sierra Club's Great Lakes Program educates the public, influences policy at the local, regional, federal, and international levels, and alerts activists about Great Lakes pollution. Write to 214 N. Henry St., #203, Madison, WI 53703; or phone (608) 257-4994.

OUTDOORS

Bicycle Touring, page 108

Eugene Sloane's *The Complete Book of Bicycling* (Fireside, 1988) remains the best overall guide. For information on the latest equipment and commercial tours, check back issues of *Bicycling* magazine.

The Sierra Club offers bicycle tours in North America and Europe. For information call the Club's Outings Department at (415) 923-5630.

FEATURES

Native Americans, page 50

The Native Resource Coalition and the Indigenous Environmental Network share the same address in that Pine Ridge trailer: P.O. Box 93, Porcupine, SD 57772.

"The Toxic Threat to Indian Lands" by Bradley Angel is available free from Greenpeace, 139 Townsend St., San Francisco, CA 94107.

The Native American Energy Network, which coordinates opposition to the storing of nuclear waste on Indian lands, may be reached through Grace Thorpe, 100 Watson Dr., Apt. N-2, Yale, OK 74085.

The Sierra Club's Native American Sites Committee, which works to protect lands of importance to American Indians, can be contacted through its chair, Harvard Ayers, Route 7, Box 183, Boone, NC 28607; phone (704) 262-6381.

Also working on Native American issues is the Sierra Club's Bi-National Great Lakes Committee, which has produced a brochure on the subject of indigenous sovereignty and environmental protection. For a copy, write to George Coling, Sierra Club, 408 C Street, N.E., Washington, DC 20002.

Ecopsychology, page 58

Paul Shepard's *Nature and Madness* offers a revolutionary diagnosis of environmental insanity. Published by Sierra Club Books in 1982, the title is now out of print but available in many libraries.

The postulators of the Gaia hypothesis explain their ideas in *The Ages of Gaia* by James Lovelock (Oxford University Press, 1988) and *Microcosmos* by Lynn Margulis and Doris Sagan (Summit Books, 1986).

A report on the "Psychology as if the Whole Earth Mattered" conference appeared in the Fall 1990 number of *Center Review*, published by the Center for Psychology and Social Change, an affiliate of Harvard Medical School.

Salmon, page 64

In 1992 the Sierra Club launched its Northwest Salmon Campaign with a grant from the Bullitt Foundation of Seattle. Contact the Columbia Basin Field Office, Route 2, Box 303, Pullman, WA 99163; phone (509) 332-5173.

The Columbia River Salmon and Steelhead Trout: Their Fight for Survival by Anthony Netboy (University of Washington Press, 1980) gives a comprehensive look at the river's development. ■

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Getting There

Two hours into my first overnight bicycle trip, I was in pain: legs throbbing, arms aching, and butt *in extremis*. Twice I had nearly careened into cars because of my heavy load, which I could barely control as I wobbled down U.S. Highway 1 along Maryland's Atlantic coast. Yet under the balm of wind, sun, and forward motion, the soreness seemed to disappear. I reveled in the freedom of knowing that I was on my own, carrying everything I needed on my bike. As I lay on the warm sand of Assateague Island that night, there was no denying that my legs felt like putty. But I smiled as I listened to the surf, the whole experience amplified by the satisfaction of having worked so hard to get there.

Long-distance cycling is limited only by one's leg strength, imagination, and finances. You can set out entirely on your own as I did on that first of many trips years ago, or hook up with one of innumerable packaged trips, such as those offered for cycling birdwatchers, seniors, or autumn leaf-peepers. Some more refined bicycle travelers pedal from lodge to lodge, indulging in hot showers and restaurant meals each night. You have options even if you decide to rough it: you can carry all your cycling and camping gear, or leave the heavy lifting to a support vehicle ("sag wagon") that lugs everything bulkier than your lunch and windbreaker.

Anyone in reasonable shape can take a short overnight bike tour, though some training is advisable to prepare your legs and rump for hours of riding. I suggest taking at least three hour-long rides a week for a month. Set modest daily distance goals for your first overnight tour. While it's possible to average 50 or 60 miles a day, many cyclists find this pace so strenuous and all-consuming that they have little time to contemplate the scenery. I know a Maine ornithologist who covers only 10 miles a day because he spends so much time watching birds; another friend happily covers 100 miles daily.

I once met an octogenarian in Africa who had cycled from Cape Town to Cairo in 1925 on a 45-pound, one-speed clunker with solid rubber tires. Today cyclists have more options, but you've got to choose your bike carefully. For instance, cyclists who ride solely on paved roads are better off riding "touring" bikes with tires 1" to 1-1/4" wide and a "standard" frame, instead of a mountain bike. This is because an off-road bike's front chain rings are

Satisfaction triumphs over soreness when you arrive on two wheels instead of four.

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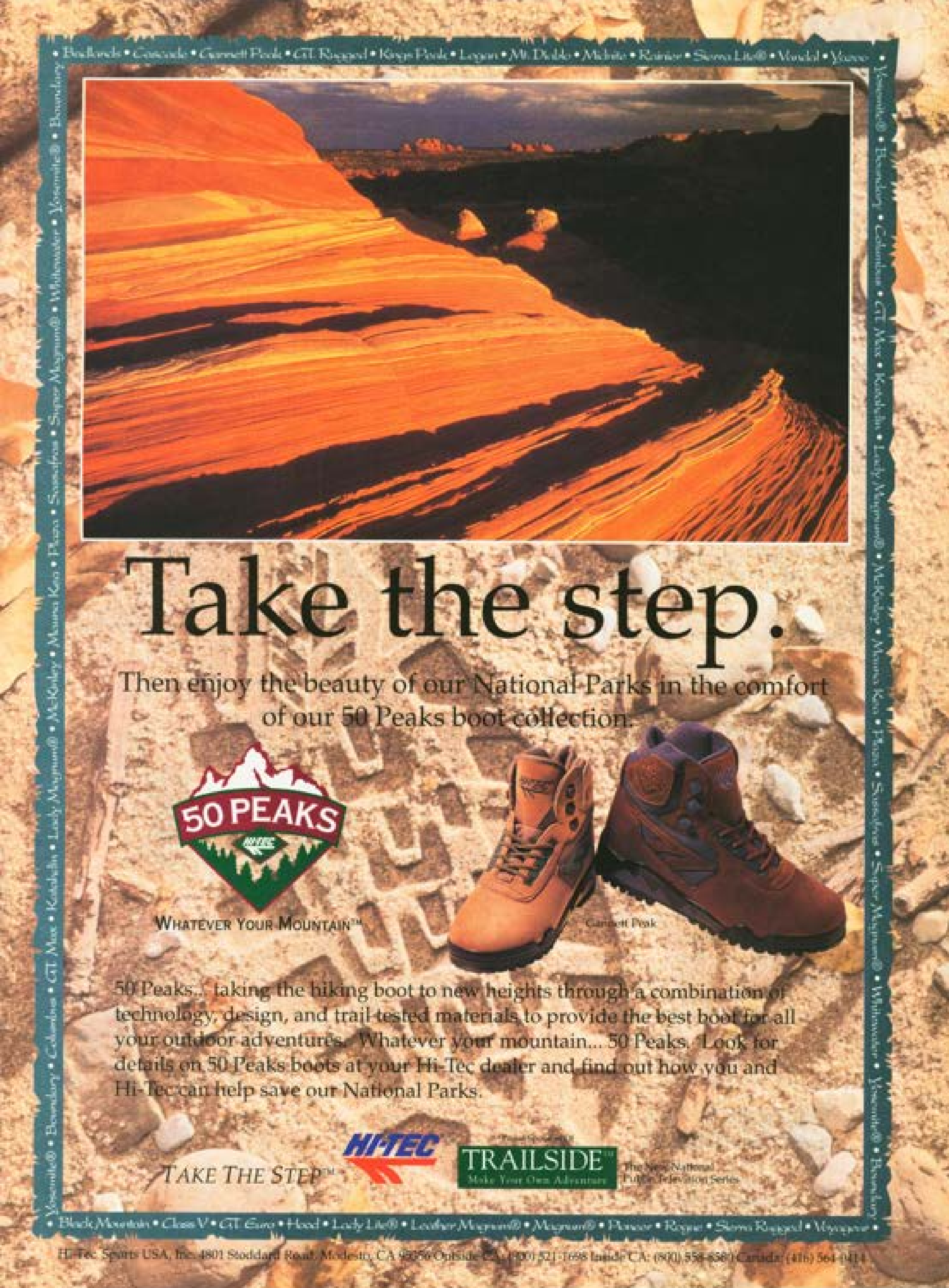
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small for greater traction, and therefore make the pavement pedaler work harder than necessary. A "hybrid" bike, which combines some of the lightweight elements of a touring bike with the heavy-duty components of a mountain bike, can be very useful—say, if you ride 40 percent on backroads and 60 percent on pavement. If all your riding is on rugged roads (or off them), you'll appreciate a true mountain bike's beefiness (and forgive its relative sloth), especially if you're carrying a load.

The best seats are designed to center weight on the hipbones rather than softer spots. Handlebars can be flat, which is helpful for rugged cycling, though I prefer a touring bike's "drop" bars even on my hybrid mountain bike, because I can switch positions frequently on a long trip to avoid cramping my back and arms.

Self-sufficient touring cyclists will be happy carrying their gear in saddlebags (panniers) mounted on a sturdy rack over the rear wheels, along with a handlebar pack for stowing maps, binoculars, and snacks. (If you've got the luxury of a sag wagon, all you need is the handlebar bag.) Use front-wheel panniers if you really need more space, but be aware that they make steering difficult. Most cycling books recommend that your panniers and gear not weigh more than about 30 pounds.

For a typical camping trip, I take a lightweight tent and sleeping bag small enough to strap on top of my rear rack. Inside my panniers I pack clothes, food, and other supplies, with items I might need in a hurry, such as raingear and fleece sweater, near the top.

On the road, I rest every 60 to 90 minutes, even at the beginning of the day. I stop well before dark to give myself time to set up camp at leisure, stroll around the inn (if I'm splurging), or make repairs I shouldn't put off, like patching tire tubes and tightening spokes. Most of all, I enjoy the place I've worked so hard to reach. ■

DAVID EWING DUNCAN *is the author of* Pedaling to the Ends of the World *(Fireside, 1986) and* From Cape to Cairo *(Grove, 1989).*

Making Believe About The World Population Crisis

World population, now 5.5 billion, is growing by about 90 million every year, and is projected to reach 12-14 billion in the next century. Nevertheless...

We keep on **MAKING BELIEVE** that a world population of that size (or even our present size) would be sustainable for the long term.

We keep on **MAKING BELIEVE** that our already overstressed ecosystem could provide an adequate standard of living for such numbers.

We keep on **MAKING BELIEVE** that family planning alone, or education, or economic development, or all of these together, are capable of halting world population growth before it reaches catastrophic levels.

But ... **if** we keep on **MAKING BELIEVE**, and keep on **pretending** that these preposterous propositions are true, we are going to wind up where we are now headed: in a world of 14 billion impoverished people. Such a world would be a place where none of us would care to live, a world of almost universal poverty, with an ecosystem in ruins.

Negative Population Growth, Inc. (NPG) believes that the optimum size for world population is not more than two billion, and that a substantially larger population would simply not be sustainable indefinitely. (World population was two billion about 60 years ago.)

In our view, only if world population is reduced to that size can we hope to create a world economy that would be sustainable indefinitely, with an adequate standard of living for all, in a healthy environment. So many people profess to believe otherwise because they do not see how world population could possibly be reduced to an optimum size.

The conventional wisdom sees no way that world population can be halted short of 12-14 billion, and accepts that growth as inevitable. Rather than face up to the grim reality that such massive growth would bring on an economic and ecological catastrophe, conventional thinkers prefer to **MAKE BELIEVE** that all will be well.

But the truth is that sustainable development for a world of 12-14 billion people, is simply an **impossible dream**.

Toward An Optimum World Population

Further population growth on the gigantic scale now projected is **not inevitable**. If we could only summon the will, we could start **now** on the path toward a sustainable world population of not more than two billion.

To reduce world population size, we need a negative rate of population growth. For that, we need a below replacement level of fertility, which a considerable number of developed countries have already achieved.

If almost no parent on earth had more than two children the world's total fertility rate (average number of children per woman) would fall well below the replacement level (roughly 2.1). That is because many women choose voluntarily to have no children at all, or only one child.

A below replacement fertility rate will be tremendously difficult to achieve in the developing countries, where 90 percent of future population growth is projected to occur, and where couples typically want from three to six children. In 1992 the average fertility rate in these countries was 3.8.

In developing countries, there must be programs of real population control geared to family limitation (no more than two children) rather than to family planning alone. Family planning must be supplemented by non-coercive incentives to encourage the two-child **maximum** family.

In 1992 the world's total fertility rate was 3.3. According to the most recent United Nations projections, if present fertility and mortality rates continue, world population would grow to 109 billion in 2100 and 694 billion in 2150!!

By contrast, with a below replacement level fertility of 1.7, or about half the 1992 level, the United Nations projects that world population would peak at 7.8 billion in 2050, but then fall to 4.3 billion 100 years later. If we could only follow that path, the world would be well on its way to an optimum population of not more than two billion.

How We Can Help

The United States now devotes only about two percent of its foreign aid budget to international population programs. NPG advocates that we spend at least 50 percent of that budget, or about $8 billion a year, to help finance programs of real population control in Third World nations.

Furthermore, we should encourage Third World countries to recognize that a replacement level fertility rate is a totally inadequate goal. That is because, even after replacement fertility is reached in those countries, the momentum of past growth would still cause their populations to almost double.

Let's Stop Making Believe

If we could only turn from **MAKING BELIEVE** to realistic analysis as a basis for action, **the world could achieve a negative rate of population growth that would set us on the path to an optimum world population of not over two billion.**

The fate of the world, and of all future generations, hangs on our success in achieving that goal.

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SHOULD GOVERNMENTS LIMIT THE NUMBER OF CHILDREN A WOMAN BEARS?

If this beleaguered planet is to have a future, we must limit the number of children women bear and men father. Laws are not necessarily the best way to restrict population growth, however. Most people react when their pocketbooks are affected, so the government should allow income-tax deductions for no more than two "natural-born" children and provide tax incentives for those with less than two children. Medical insurance companies should cover no more than two full-term pregnancies and increase premiums for larger families. Companies should allow no more than two leaves of absence for pregnancies.
Boyd and Barbara Jones
St. Louis, Missouri

A woman's body is as personal and private as an unspoken thought. To put the control of birth in the hands of government would help destroy the last vestiges of personal liberty in the world.
Sherry Ellberg
Kingsburg, California

Why are we placing the burden of population control on women? The Chinese have tried to control population growth by means of reduced governmental patronage and by forced abortions. Again, the burden is placed on the women by the men in power. Why not require that each man have a vasectomy after siring two children?
Daniel G. Axt
St. Cloud, Florida

Finally you have asked the only question that really matters. The answer is yes, absolutely. And the number is one.
Brad Newsham
San Francisco, California

Even to ask this question is to summon the darkest days of human history. This is the kind of question asked, and sadly answered, in truly evil places like Nazi Germany and Cambodia. Asking this question with the slightest hint of seriousness is amoral. And when you suggest that it's women whose fertility should be curtailed, you send an icy chill through my bones.
Bill Adler, Jr.
Washington, D.C.

Women in countries like India, Bolivia, and Brazil are, more often than not, forced into the role of baby-making machines by the upswelling child-death rate and their societal role as wife/mother/subsistence laborer. Instead of regulating reproduction, governments should reach out to their provincial towns and megalopolises to change the belittling role of women forever. Only then, when individuals can control their own destiny, will population growth be brought under control.
Jana Gordon
Boca Raton, Florida

I would like to see a social policy (hopefully, not a legislated policy) where each person gets to reproduce him or herself once—and that's it. If someone wants more children, perhaps the voluntarily childless can trade their "right" to others.
Gwenn Gröndal
Carlsbad, California

We seem to be moving ever closer to a time when Big Brother dictates our every move. Women do not want anyone telling them what to do with their bodies, least of all a government. The decision of whether or not to have children should be up to the people directly involved. Let governments reward people for doing the right thing.
Karen Glaeser
Portland, Oregon

Discriminating against a woman for bearing "too many" children is as wrong as discriminating against someone for having certain political opinions. Declaring the world so full it has no living space for "over quota" people is as wrong as declaring the world so full it has no living space for people of certain races. The root cause of environmental degradation is not the number of people on this planet, but the excessive consumption level in contemporary society. "Sacrificing for the survival of the planet" should mean sacrificing unnecessary consumption, not lives.
Jeanette Wolfberg
Mount Kisco, New York

We should require all women on welfare of potential childbearing age to accept Norplant contraceptive implants. While we should generously help those who are on welfare to bring up their children properly, no one has a right to have additional children at taxpayer expense.
A.W. Jones
Mulberry Grove, Illinois

It would be more helpful if the children our women bear could find some way to limit the government.
John McClaughry
Concord, Vermont

Advocates for governmental limitations on family size are the same ones who advocate drastic immigration curtailment. The fact is that both will tend to stabilize the percentage of whites in the United States. One does not need to look within the sphere of moral judgment to recognize that such policies are racially discriminatory.
George S. Emmons
Newtown, Pennsylvania

Just as our Supreme Court has ruled in *Roe v. Wade*, women have the right to privacy with respect to their own bodies, and this right should extend to bearing children.
Valerie Wharton
San Francisco, California

Yes, but only through economic incentives, using taxes, subsidies, and all methods of encouragement. If we cannot achieve stabilization voluntarily, we only postpone the day when it will be necessary to adopt more draconian measures.
Tanya M. Henrich
Chico, California

Must women forever be pictured as errant children in need of control? If women could be empowered through full participation economically, perhaps the lure of children would not be so strong. When women can go to work and not be talked down to or felt up, when women earn as much as men for doing the same job, that's empowerment.
Barbara Kuhlman
Flagstaff, Arizona

FOR NEXT TIME...

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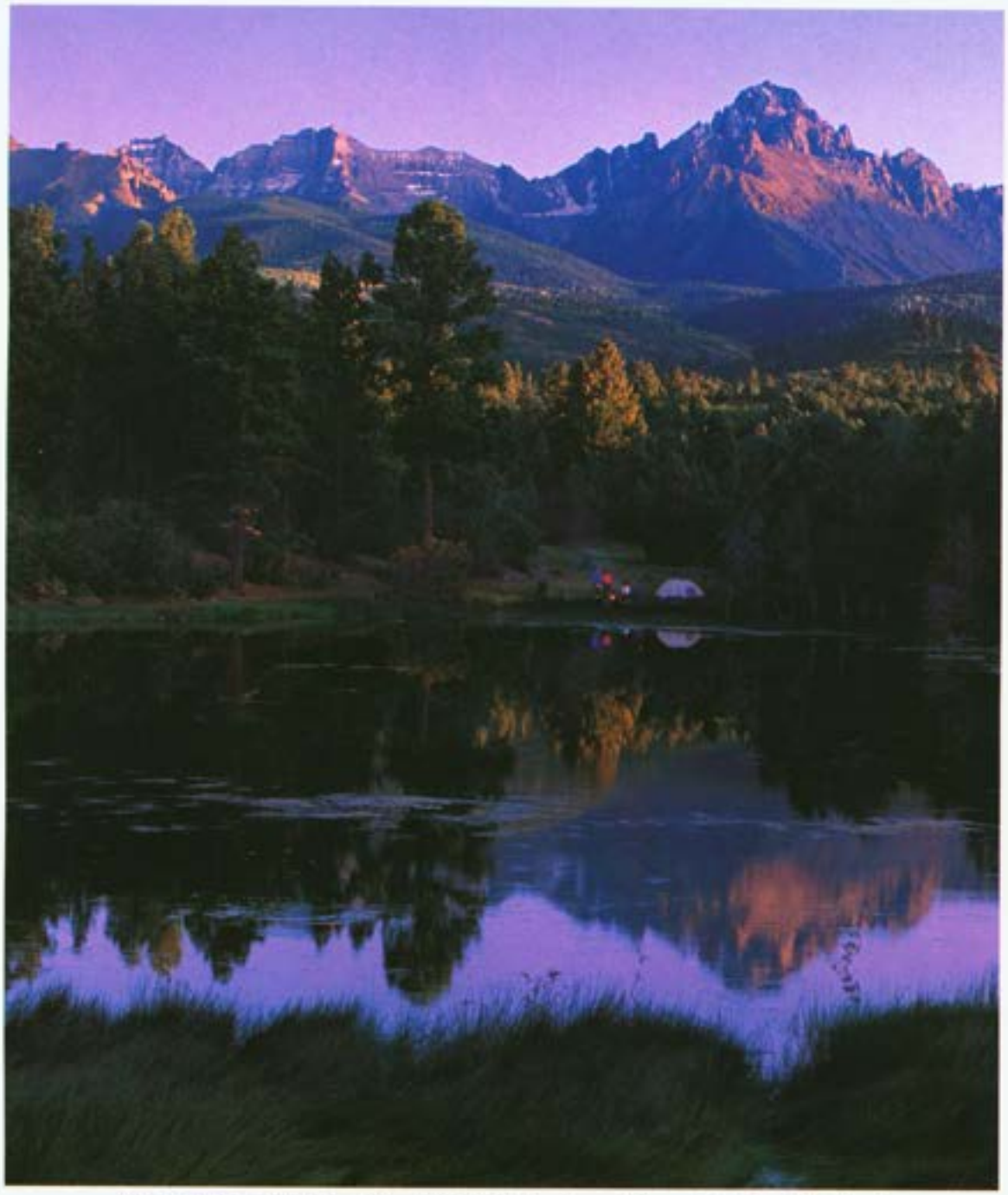

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