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VOL. 75/No. 5 SEPTEMBER/OCTOBER 1990

Sierra

COVER: A fine-grained view of Utah's sandstone splendor—the second-place color winner in the "Patterns" category of this year's *Sierra* photo contest. For the other winning images, see page 58. *Photo by Frank Houck.*

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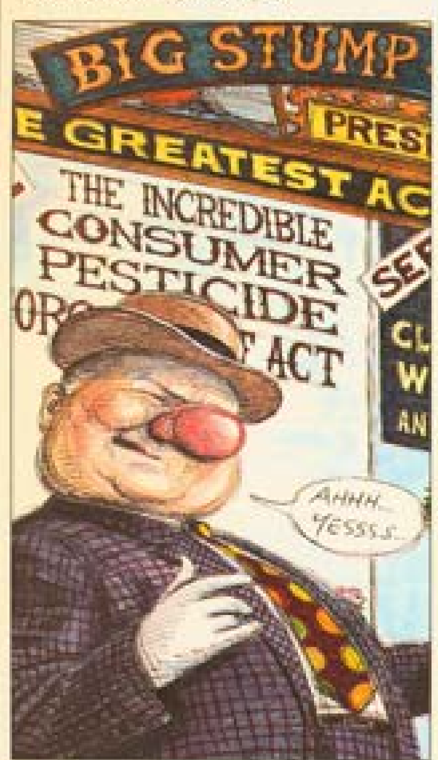

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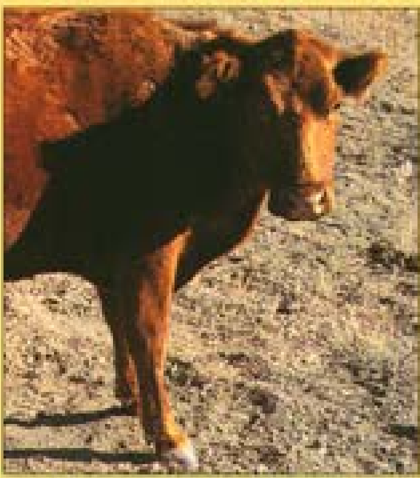

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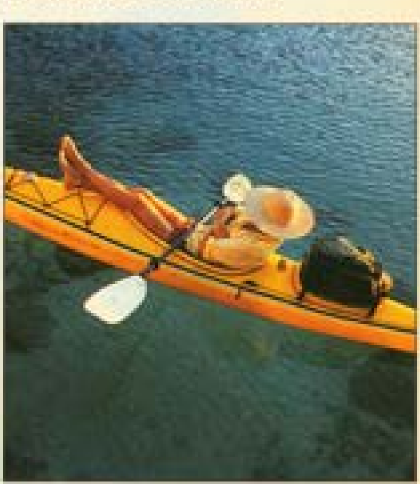

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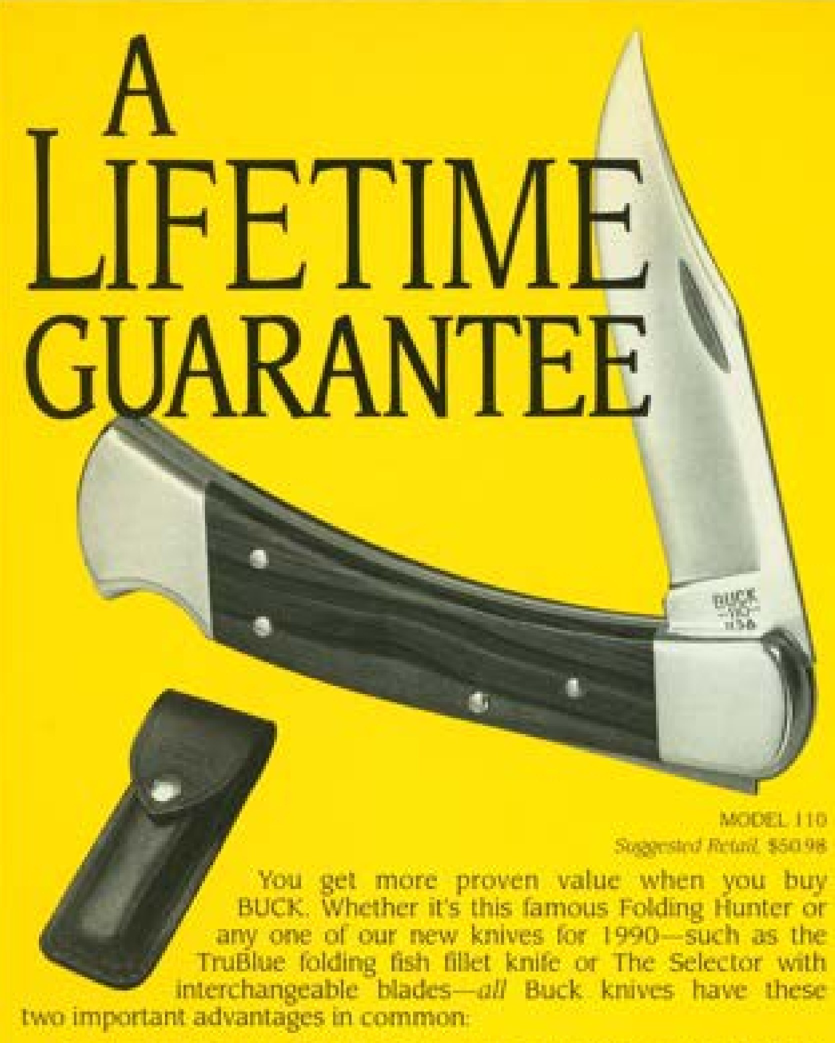

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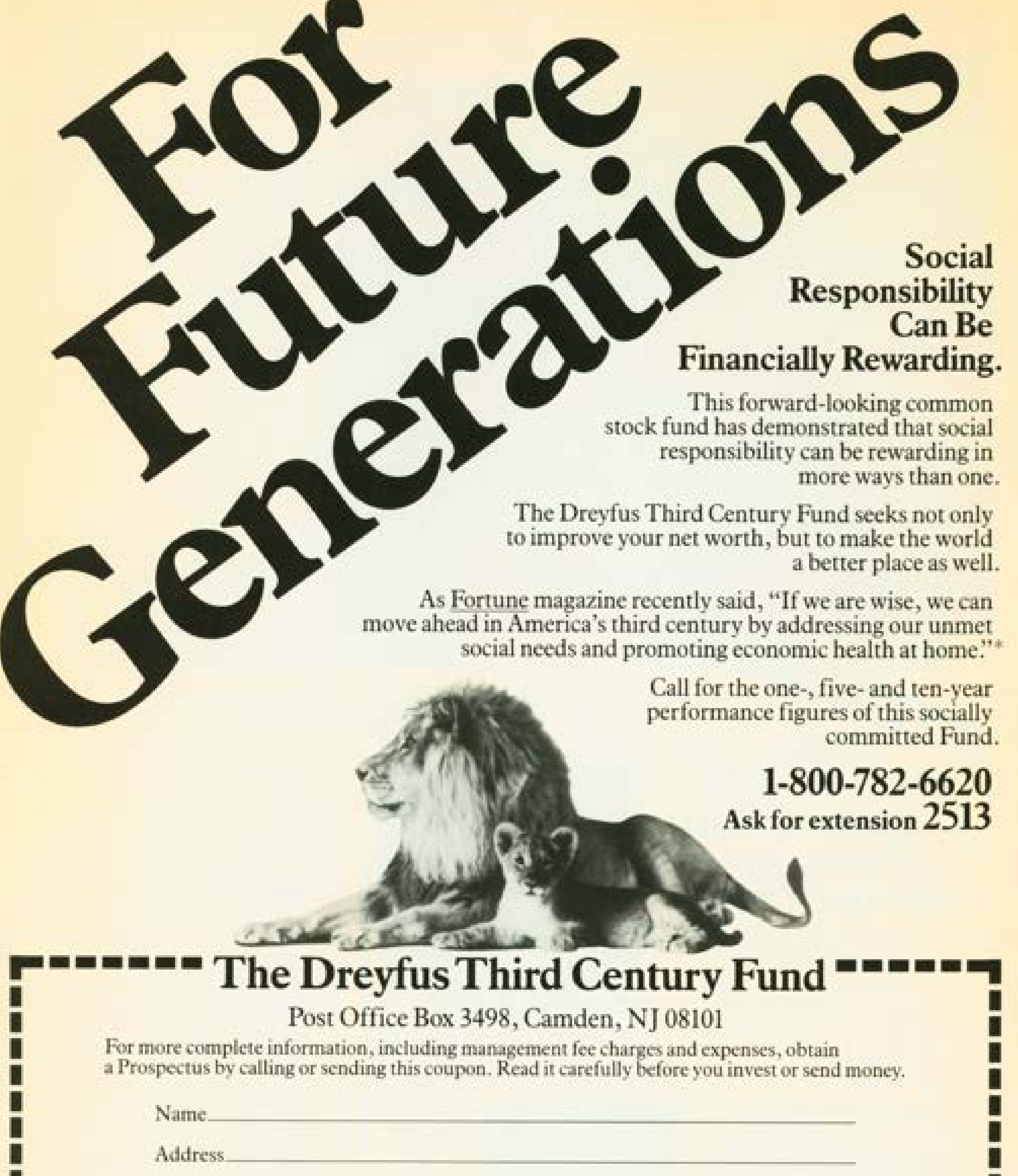
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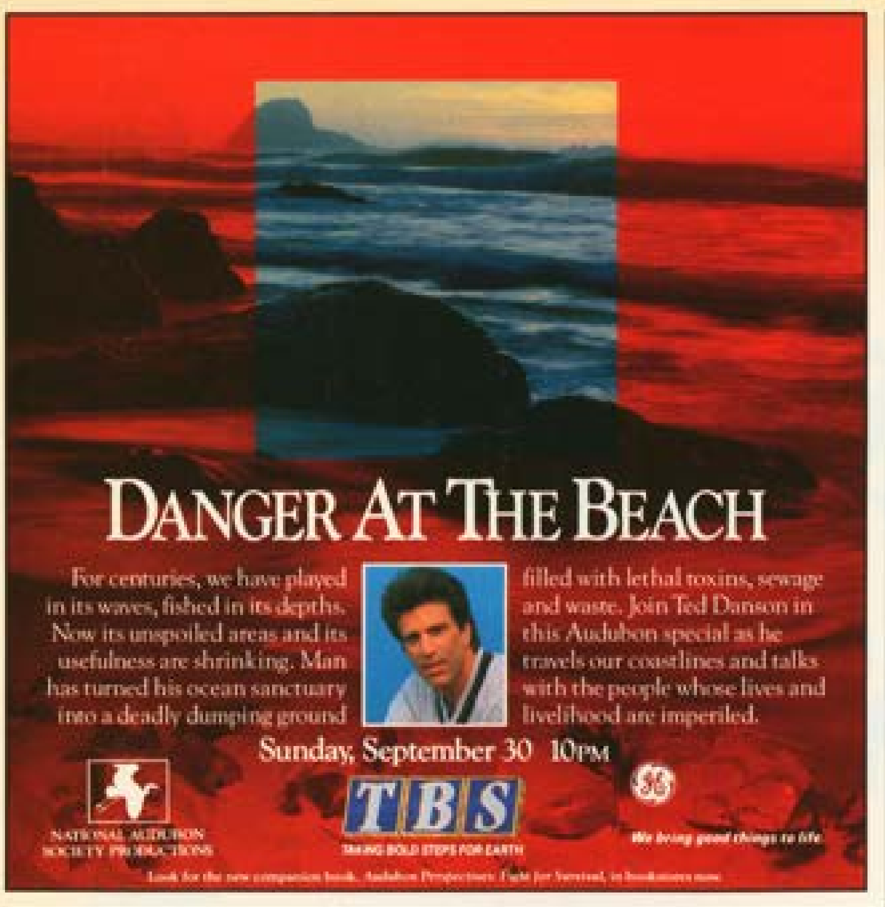

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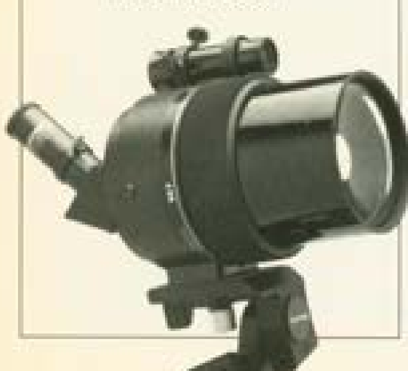

LETTERS

MINERAL KING RECALLED

I was thrilled to discover Tom Turner's detailed account of the fight for Mineral King ("Who Speaks for the Future?" July/August), as I'd never known the specifics. It is an illuminating story, especially to those of us who are personally acquainted with what was at stake. Even though I knew the outcome, I was still moved to tears at the story's "happy ending."

Ted Caragozian
Ranchita, California

The legal battle for Mineral King was undoubtedly the decisive factor in that campaign, but *Sierra*'s readers might like to remember that the Club's grassroots played an active role too. The decade between 1965 and 1975 was a busy one for those of us who led hikes in the area, made speeches on its behalf, or showed pictures in early slide programs all over Southern California, stirring up the populace to write the letters that poured into Washington, attracting congressional and media attention. Only when Mineral King was finally made a part of Sequoia National Park was our work finally done.

Sally and Les Reid
Frazier Park, California

The writers are former directors of the Sierra Club.

RESPONSIBILITY'S BURDEN

In "The Stockbroker's Smile" (July/August), Paul Rauber argues that the major environmental mutual funds are wrong to invest in Waste Management, Inc., claiming that the company is a "polluter." The article itself is wrong in fact and in opinion.

The article states that WMI trucks have been "spotted dumping recyclables in ordinary landfills." WMI is the nation's largest recycler of household discards, now offering curbside collection of recyclables in more than 250 cities, towns, and counties. We do not dump recyclables. We sell them for profit. We are not so foolish.

The article claims that WMI sold PCB-contaminated oil as "home heating oil." We have not done this, nor has any government inspector claimed that we have. Ten years ago an employee at the Chemical Waste Management site in Ohio accepted two truckloads of used oil from a paper company. The paper company claimed that the oil was free of regulated levels of PCBs. It was not. The oils were blended with other oils and sold for use in industrial furnaces. It was wrong to blend down the PCBs this way, and the management of WMI regrets that this happened. However, the actual PCB concentration in the oil did not exceed that which then was and currently is lawful to use as an industrial fuel. None of the oils were sold for home use.

The article also states that WMI and Browning-Ferris Industries were "forced to pay more than $450 million in fines over the last decade. . . ." WMI has paid fines. Compliance has not been easy to achieve: hazardous waste regulation, in particular, has changed constantly and is complex. Nevertheless, we accept responsibility for problems arising from our mistakes. We are doing everything we can to prevent such problems from recurring. And for the record, the total fines paid over the company's entire existence add up to much less than one tenth the amount stated in the article.

William Y. Brown
Director of Environmental Affairs
Waste Management, Inc.
Washington, D.C.

Paul Rauber responds: *Now it's Waste Management putting on the crocodile smile. Readers can judge for themselves whether the giant conglomerate is a socially responsible concern. Consider the following:*

It is true that WMI runs its "Recycle America" program in many communities—where citizens are asked to pay an extra fee

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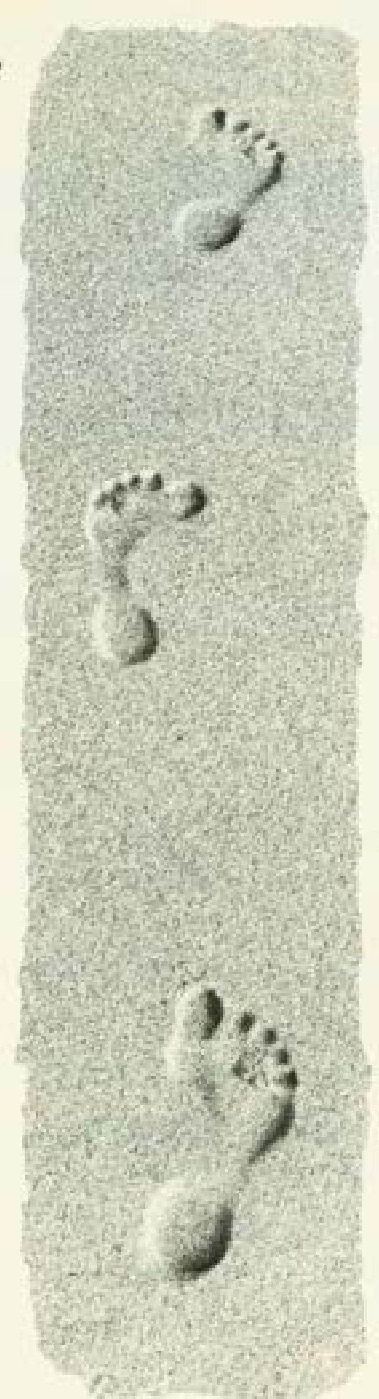

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for the pleasure of recycling. As usual, WMI profits in every possible way: from regular garbage-collection fees, which are not reduced for recyclers; from lower dumping fees for the decreased volume of garbage; from the recycling fees charged customers, and from selling the recyclables—but only when the company finds it convenient to sell them. Community recycling groups have observed WMI personnel dumping recyclables in landfills in Carsonville, Michigan, in Fayetteville, Arkansas, and in Arlington, Virginia.

One would think from WMI's response that the PCB-contaminated oil accepted by its Vickery, Ohio, dumpsite was limited to two truckloads. They must have been very large trucks: In March 1983 nearly 1 million gallons of PCB-contaminated oil were found stored at the site, which had no permits for such hazardous material. WMI claims that the contaminated oil it sold as fuel for industrial boilers (which might include those for schools and hospitals) had less than the 50 parts per million of PCBs allowed by law; to achieve this it must have blended down a lot of oil, since the EPA found concentrations of PCBs at Vickery as high as 1,500 ppm. The EPA estimates that 90 percent of the contaminated oil at Vickery was resold to some 50 different customers in the Midwest—whose names WMI has refused to reveal. Some of the contaminated oil was sold to Midwest cities, where it was sprayed on dirt roads to keep down dust. Other lots were sold to brokers, who then resold it, making it very difficult to determine the end user. According to Bill Sanjour of the EPA, it is "very likely" that some of the oil was sold for home use.

The $450-million fine figure was the result of a typographical error. The figure in my original manuscript was $50 million, $30 million of which is accounted for by fines to WMI between 1982 and 1987 alone—certainly nothing to be proud of. That the figure is not much higher is due to the softness of state and federal regulators; in the Vickery, Ohio, case cited above, Ohio originally sought fines of $450 million for that violation alone. While WMI admitted to making $20 million by reselling its contaminated oil, state and federal fines against WMI in the Vickery case totaled only $16.8 million, resulting in a tidy profit for WMI's corporate irresponsibility.

I was astonished by your article. Tone and thrust aside, I have no idea where the figure of $450 million in fines came from, nor how to pry Browning-Ferris Industries and Waste Management, Inc. apart in this casual lumping together to find the real story. I also have no idea where the allegation that together we have "received more than a thousand citations for dumpsite violations" came from. Both statements are too offhand.

What's worse is the suggestion that BFI's regrettable incident in 1978 in which waste oil was inadvertently contaminated by nitrobenzene was done deliberately or had something to do with BFI withdrawing from the hazardous waste business in 1990. Neither is true. BFI's action after discovery of the incident was a model of a responsible company acting responsibly: We voluntarily notified all agencies; split samples; cleaned up the roads of six subdivisions when trace amounts of nitrobenzene were discovered; set up medical and veterinarian referral programs that were free and open to any doctor or veterinarian (and none ever referred any patient); paved the roads with standard paving materials; changed policies—no road oil was subsequently given to anyone again; changed procedures; and took other steps to ensure it could not recur.

Lumping BFI in with ". . . major polluters in the worst sense of the word . . ." strikes me as the height of irresponsibility, but that is the Sierra Club's call and it is up to BFI to demonstrate otherwise. Putting the Club' stamp of approval on Mr. Rauber's a ticle is something else.

Peter Block, Divisional Vice-President
Corporate Communications
Browning-Ferris Industries
Houston, Texas

Paul Rauber responds: *Brown Ferris's "recycling" of toxic nitrobe certainly was deliberate—the practic came to light after BFI fired an em who refused to mix the toxic wast used oil to be resold. I did not m imply, however, that this incident w sole reason for BFI withdrawing fro hazardous-waste business. Other, more recent debacles include a 1984 incident in which phenol-contaminated rainwater was deliberately pumped into the creek supplying drinking water for the town of Williamsburg, Ohio, and the $2.5-million fine levied in 1988 for more than 1,700 violations of federal environmental law at BFI's Livingston, Louisiana, dumpsite. (This fine, by the way, was the largest ever imposed for environmental pollution—surely good reason to lump BFI in with the worst major polluters.) Both* The New York Times *and* The Wall Street Journal, *in their coverage of BFI's divestment of its hazardous-waste subsidiary this April, cited its repeated difficulties with the regulatory authorities.*

GEOGRAPHY LESSON

Last Sunday I went hiking along the Pacific Crest north of Gaylor Lakes in Yosemite. I crossed from the park into the Hall Natural Area to enjoy a respite from the westerly wind. Widespread snow on the ground hindered further

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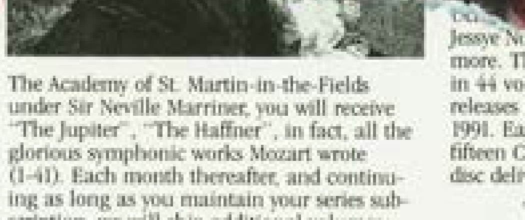

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exploration of the area, so I sat down for half an hour and visually reconciled its surface features with my topo map. As far as I could tell, nearly the whole Natural Area was within my field of view. In "Hey, I Can See My Car From Here!" (July/August) the size of the Hall Natural Area is given as 3,883 square miles. It appears to me to be considerably smaller.

Jack A. Cleeton
Sacramento, California

And well it should: The Hall's boundaries actually encompass 3,883 acres.

BITTER AFTERTASTE

I read your May/June "Afield" article about seaweed harvesting with dismay. Unquestionably, some seaweed populations can sustain controlled harvest. Some, however, particularly the sea palm, lead a tenuous existence, and could be driven to local extinction. This would deprive herbivores of nutrition and a host of dependent invertebrates of a unique habitat.

I recommend that persons interested in collecting marine life read "Harvesting of Non-Traditional Marine Resources in Washington State: Trends and Concerns" by M. Dethier *et al.* in *The Northwest Environmental Journal*, Vol. 5, pages 71-87 (1989).

Louis Druehl
Bamfield Marine Station
Bamfield, British Columbia

That journal article says, regarding sea palm: "It is highly sought as a food item, as its blades are tender and sweet. After harvest, it often fails to regenerate. Moreover, its spores cannot disperse more than a few meters . . . so it effectively cannot recolonize denuded areas." However, John Lewallen of Mendocino Sea Vegetable Co., a small-scale commercial harvester of edible seaweed cited in our original article, says his company has practiced "frond-tip harvesting" of a single patch of sea palm for a decade now. This method, unlike cutting the plant at the base of each bladelet, permits it to regenerate. Amateur foragers won't have a chance to practice that technique, though—harvesting sea palm in California is illegal without a commercial license.

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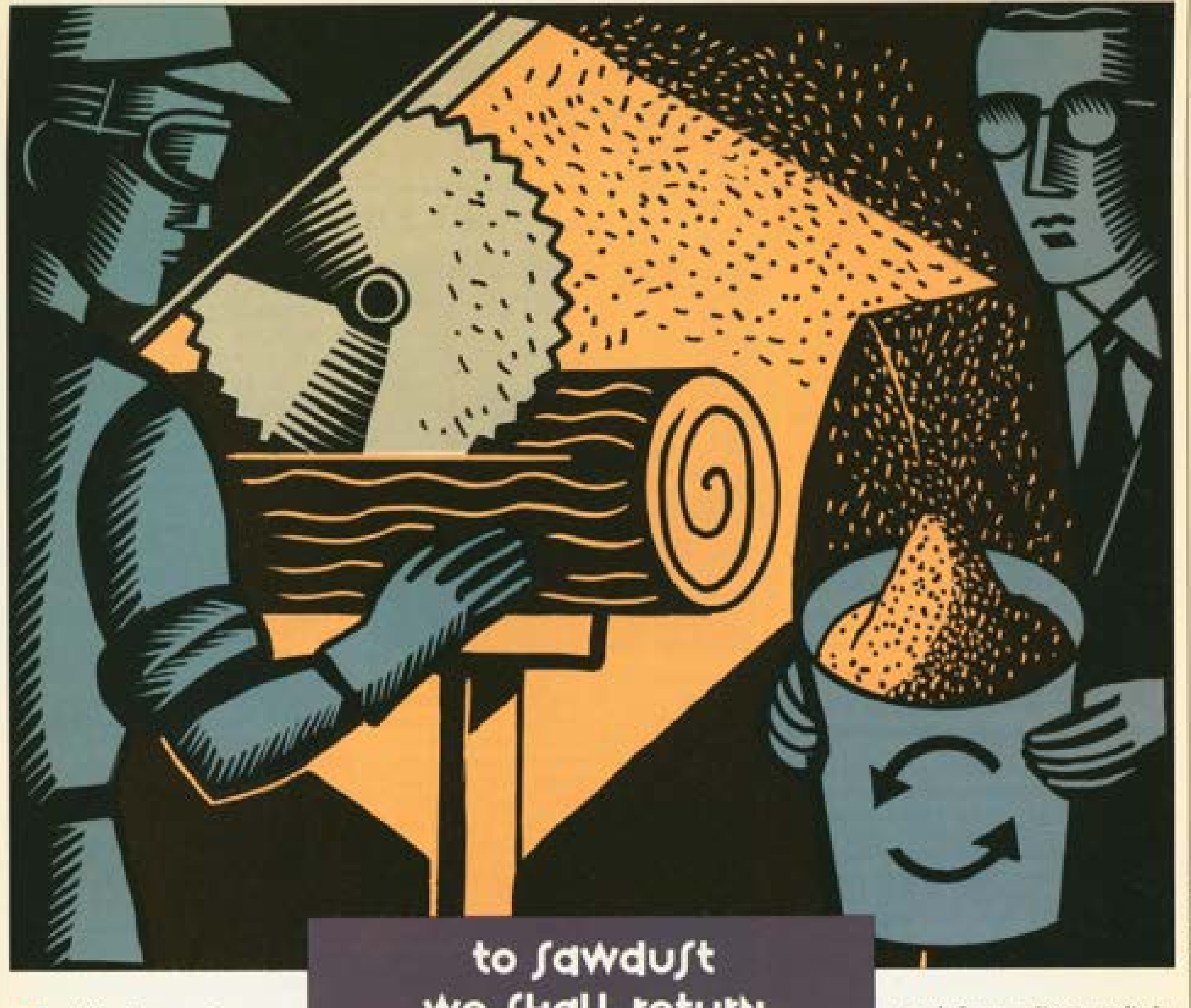


ANTHONY RUSSO

to sawdust we shall return

The EPA plans to give what amounts to a Good Recycling Seal of Approval to paper made from sawdust. The lumber industry may applaud, but other people think the idea is counterproductive at best.

Alan Davis, founder and president of Conservatree Paper Co., a San Francisco recycled-paper wholesaler, says one reason people buy recycled paper is that they want to reuse material that would otherwise end up in a landfill or incinerator. But sawdust, Davis says, isn't part of the country's landfill space problem—it's already widely used for fuel and in particleboard.

So when EPA Administrator William Reilly recommended in May that paper made with "recovered sawdust content" by two Maine mills be added to the list of recycled papers that federal agencies are encouraged to purchase under so-called "affirmative procurement" policies, Davis saw red. Unless paper is fashioned from previously used and discarded material, he wants to know, how can it honestly be called recycled?

The rule allowing paper made with sawdust to be listed as recycled would further confuse an already muddied definition. Consumers who pay a premium for recycled paper probably assume they're getting something made from used paper, not industry leftovers. But very little of what goes into recycled paper is "post-consumer waste"—the printed-on or photocopied paper that's chucked out after being used in homes and offices, and that makes up about a third of the nation's garbage.

The EPA purchasing guidelines don't require mills to use *any* post-consumer waste in making recycled paper—and few mills do. "All the paper purchased by government could meet EPA's definition

for 'recycling' and still not reduce the nation's solid-waste problem by one garbage-truck full," Davis wrote to Reilly in June.

Instead, now that more consumers are asking for recycled paper, mills have begun slapping the "recycled" label on paper made from materials ordinarily used in virgin paper—such as mill and print-shop wastes and clippings from the manufacture of envelopes and paper cups.

To really tackle the garbage problem, however, mills will have to start using post-consumer waste. And that will require both a better nationwide system for collecting and sorting paper, and more mills investing in the equipment needed to remove dyes and inks. Not much is likely to happen without government prodding: Only four U.S. mills currently de-ink, Davis notes, down from a dozen a decade ago.

Conservatree is asking the EPA to cancel the proposed government purchasing preference for sawdust paper, and instead make new rules that specify the percentage of either post-consumer or de-inked waste contained in recycled paper—as laws in California and New York do. Such rules would encourage mills to start turning yesterday's landfill-cloggers into tomorrow's office memos.

—Susan D. Borowitz

Lookout Above!

A summer-season fire lookout is a meteorologist, a communications link, and a detective: Is that smoke out there a camper burning green wood, or a lightning-struck snag? Jean Rukkila has spent six seasons at three different Arizona lookout towers, her camera pointed outward all the while: "Looking through a viewfinder in all kinds of light lets me float out the window and meet the clouds, sunrises, and sunsets head-on."

Angles on the atmosphere, from a tower high above Coconino National Forest.

JEAN RUKKILA PHOTOS

In the Dock by the Bay

While criminal charges against polluters will always grab the media's attention, the Sierra Club Legal Defense Fund (SCLDF) recently drew nationwide headlines for its success in an old-fashioned civil case. The journalistic attraction was the size of the settlement: At $5.5 million, it is by far the largest ever achieved under the citizen-suit provisions of the Clean Water Act.

"This settlement should send a strong message to other polluters," says SCLDF attorney Stephan C. Volker: "Clean up your operations or face the prospect of being hauled into court and paying a substantial penalty."

The Legal Defense Fund first filed the suit on behalf of the Sierra Club in 1984. The basic complaint was simple. Union Oil Company of California (Unocal) had on numerous occasions poured poisonous wastewater from its refinery in Rodeo (north of Oakland) directly into San Francisco Bay. The company's own records showed 76 violations of the discharge permit it had been granted under the Clean Water Act. A former refinery employee, Thomas Billecci, alleged that Unocal had failed to report thousands of other illegal dumpings.

Billecci became a key SCLDF witness after having tried unsuccessfully to alert the Environmental Protection Agency, the California Regional Water Quality Control Board, and several other agencies to the alleged violations. People at each of these agencies discouraged his attempt to blow the whistle on Unocal, Billecci says. One Water Quality employee even told him that "a whitewash" was the most he could expect from the state.

Before the citizen-suit provisions of the Clean Water Act were passed, Billecci and SCLDF would have been obliged to sue the government to stop illegal dumping. Amendments to the act in 1972 gave citizens the right to face off in court with the polluters themselves.

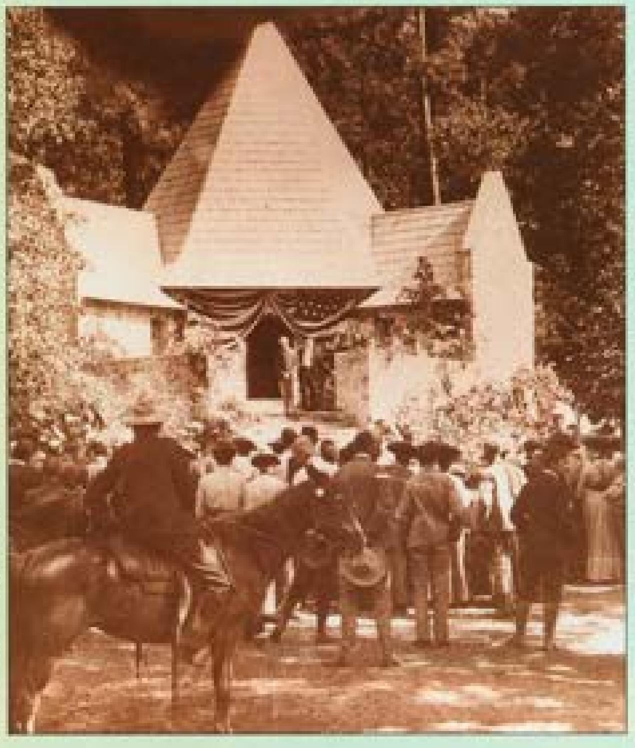
A tortuous series of legal wranglings in the Unocal case sent SCLDF marching through district and appeals courts and finally to the Supreme Court and back. By early 1990, when a second round of the case had gone sour for Unocal in district court, the company finally capitulated. It agreed to give half of the $5.5-million out-of-court settlement to the Trust for Public Land, for acquisition and restoration of wetlands around San Francisco Bay. The EPA and the California Water Pollution and Abatement Fund received $1.5 million for bay-related projects. The remaining $1.3 million was awarded to SCLDF to cover court costs.

Since the dispute began, Unocal has installed a $64-million wastewater-treatment facility at the refinery. Other firms in the area have upgraded their operations as well, resulting in fewer reports of discharge violations, according to state officials.

Firms may still be dumping clandestinely, of course. To companies like Unocal, with annual net profits ranging from $176 million to $804 million in the past decade, even a $5-million risk may not be unthinkable. But according to Volker, the terms of this settlement bring SCLDF and the Sierra Club a big step closer to one of their long-term goals—"taking the profit out of pollution."

—Joan Hamilton

Landmark Lodge



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The LeConte Memorial Lodge at Yosemite National Park honors the memory of Joseph LeConte, a University of California geology professor who was an early explorer of the Sierra Nevada and a charter member of the Sierra Club. (It was he who lent scholarly credence to aspects of John Muir's controversial theory regarding Yosemite Valley's glacial origins.) On June 29, the National Park Service dedicated the 86-year-old structure—still in use as a library and interpretive exhibit site—as a National Historic Landmark.

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Text by TOM TURNER · Photographs by CARR CLIFTON

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A Bag in the Hand

Next time that checker down at the Quik-Mart asks you to choose between logged forests and clogged landfills, remember that you have another option. Reusable bags are far friendlier to the environment than either paper or plastic.

Eight months ago the Marin Conservation League in Northern California convinced several grocery stores to offer customers a sturdy, reusable canvas tote, nicknamed the "Just Say Neither" bag. Local grocers, happy to cut overhead costs, snapped them up, and their customers did too. The stores sold 1,600 bags (at $12.75 a pop) in just four months.

Now grocers around the country have begun offering their own reusable bags. Natural-food chains were the first to jump on the cart. This spring, Living Foods in Berkeley, Wellspring in Durham, N.C., and Nature's in Portland, Ore., began hawking canvas or nylon bags for between $8.50 and $12.50. Larger supermarket chains (among them Safeway in the West and Kroger in the East) have followed suit by offering customers canvas or nylon bags at cost. The Kroger bags will carry the logo of a corporate sponsor—probably Pepsi or Coca-Cola. If you don't mind being a walking advertisement for a multinational corporation, these are your best buy.

Eco-shoppers can also order reusable grocery bags through the mail. Roomy nylon bags in red, black, blue, or forest green are being offered by Industrial Wear (P.O. Box 1349, Studio City, CA 91614) at $13.65 postpaid for one or $29.50 for three; the company donates a percentage of its profits to environmental groups. Cotton bags in varying fabric weights are offered by, among others, Tree Top Enterprises (2692 Sandy Plains Rd., Suite A-19, Marietta, CA 30066), Equinox (1370 Park Ave., Williamsport, PA 17701), Burbank Enterprises (P.O. Box 527, Brookfield, MA 01506), California Lifestyles (2264 Katherine Ave., Ventura, CA 93003), and Treekeepers (Dept. G, 249 S. Hwy. 101, Suite 518, Solana Beach, CA 92705). You can also let your fingers do the shopping: For the location of stores that carry the cotton EcoSac (three for $19.95) manufactured by blue rhubarb, inc., dial 1-800-926-1017.

For those confused by all the choices, here's a one-stop shopper's hint: This fall the Sierra Club's mail-order catalog (and some of its bookstores) will offer a nylon grocery bag imprinted with the Club's logo and the words "Make a world of difference—say no to throwaways."

Do people actually use these bags? Jim Canepa, store manager of the Mill Valley Market in Marin County, has stocked the Marin Conservation League bag for eight months: "I never dreamed it would be as successful as it is. At this point, just about every one of our customers has one, and is using it, too."

Nancy Norelli of the Marin Conservation League knows that the sudden flood of bags on the market will cut into her group's profits, but she doesn't mind the competition jumping on the bandwagon. "When it comes to saving trees by using canvas bags," she enthuses, "the more the merrier."

—Laura Hagar

CRISTINA TACCONE

ERWIN & PEGGY BAUER

All creatures great and small get loose in a hot tub, as this grizzly cub taking the waters at Yellowstone would aver (if bears were given to declarative statements). The photo is one of dozens in Candace Savage's *Grizzly Bears*, new this fall from Sierra Club Books (U.S.) and Douglas & McIntyre (Canada).

POLITICS

Flying False Colors

Framers of California's November ballot initiatives wonder if the state's voters are green as in "environmental," or as in "gullible."

VICTOR JUHASZ

Seth Zuckerman

When Californians go to the polls this November, they'll have the opportunity to vote into law two seemingly virtuous environmental measures: The Consumer Pesticide Enforcement Act and (take a deep breath) The Global Warming and Clearcutting Reduction, Wildlife Protection, and Reforestation Act.

Neither of these sounds unusual in a state that leads the nation in the use of public initiatives to enact environmental laws. But these two proposals are adamantly opposed by conservation organizations, who charge that they are decoys sponsored by agribusiness and the timber industry to confuse voters and keep two more stringent propositions on the same ballot from taking effect.

Trojan-horse initiatives are the latest twist in attempts to disarm the initiative process, which has been one of the most effective tools for environmental protection in California. Landmark coastal legislation in 1972, which set guidelines for protecting the Golden State's 1,100-mile shoreline, and an exhaustive 1986 toxic-chemical law were both fruits of that process. In June, California voters approved a ban on the hunting of mountain lions and funded a host of ambitious rail-transit projects.

The two conservationist-supported initiatives on the November ballot would bring about the most sweeping environmental reforms in the state's history. The Environmental Protection Act, popularly known as "Big Green," takes on pesticide abuse, global warming, and ocean pollution. Sponsored by a consortium of organizations, including the Sierra Club, the law would phase out all pesticides known to cause cancer and require that standards for pesticide residues in food be set to protect children—the most vulnerable segment of the population. New oil-drilling in state waters would be outlawed, and oil-spill cleanup plans would be put in place, funded by a 25-cents-per-barrel tax on oil piped or shipped into the state.

What's more, the measure has timetables and teeth. Ozone-depleting chemicals would be banned by 1997. The state would implement a plan to cut emissions of climate-altering carbon dioxide by 40 percent in 20 years. Finally, the elected office of Environmental Advocate would be created to oversee enforcement of state environmental regulations.

A second initiative, sponsored by Forests Forever, a coalition that includes the Sierra Club, would overhaul for-

estry practices in California at a time when the northern spotted owl has focused national attention on the intertwined fates of the Pacific Coast's old-growth forests and its timber industry. The initiative would ban clearcutting on private and state-owned lands, provide more than $700 million to purchase ancient forests, and oblige timber owners to practice sustained-yield management—cutting wood no faster than the forests are able to grow it.

Despite California's reputation as an environmental bellwether, the proponents of Big Green and Forests Forever felt the need to bypass the state's agencies and its legislature and go directly to the voters. Initiative proponents point to a long line of proposed bills that failed to wend their way through the Capitol's corridors and into law. "Big Green was born of the frustration that environmentalists have felt in the last eight years," says Lucy Blake, executive director of the California League of Conservation Voters. "Governor [George] Deukmejian has vetoed about half of the 'green' laws to reach his desk. In some cases, no one even attempted to pass a bill, because they knew the governor would refuse to sign it."

Activists fault the state's elected representatives as well. "Lawmakers are paralyzed on a front of policy issues," says Carl Pope, the Sierra Club's conservation director. "An issue can be at the top of the public's agenda and face opportunities for reform that are understood by everyone. But the legislature doesn't pass anything, or the governor vetoes a bill and there's no vote to override the veto. The legislative process doesn't work in California."

Yet even their defenders admit that ballot initiatives have disadvantages. Pope estimates that going straight to the voters in California costs at least $1.5 million. Resorting to an initiative also means that "issues aren't dealt with before they reach a crisis, and by the time something becomes a crisis, it's very difficult to fix."

"It's a lousy way to make law," says Kevin Eckery, spokesman for the Timber Association of California. "Debate

gets reduced to 30-second sound bites and road signs containing at most six words, usually beginning with 'No.'"

California State Senator Barry Keene has harsher words for those who go over the heads of legislators. "The public has fallen easy prey to the simplistic and single-dimensional initiative process," he said at a forum on forestry issues in April. "There is something presumptuous about small groups of people going into an office somewhere and attempting to make policy for the state of California." (While 460,000 valid signatures are currently required to qualify an initiative for the ballot, the measures are often written with little or no public input.)

Keene has introduced moderate forestry reform bills several times in recent years, only to see them defeated. He is understandably sensitive to charges of legislative inaction and accuses environmental groups of dooming his bills by not rallying around them. But Gail Lucas of Forests Forever and the Sierra Club's Forest Practices Task Force sees intense lobbying as the culprit: "It was timber-industry money that prevented good legislation from being passed."

That money has now found its way to the initiative process. The business-sponsored initiatives—dubbed "Big Stump" and "Big Brown" by their opponents—contain provisions that environmentalists call weak and narrow, with loopholes big enough to drive a truck through. For example, "Big Stump" would ostensibly ban clear-cutting in ancient forests, but as few as one or two trees per acre could be left standing and still satisfy its provisions. "Big Brown" calls for increased research on pesticides, but no new regulation or enforcement.

The industry measures are more than attempts at moderate reform, however. Each contains a "poison pill": If an industry-supported proposition receives more votes than the conservationist-sponsored version, but both are passed by the voters, the former nullifies the timber or pesticide sections in the latter. (The Forests Forever initiative contains a similiar provision that would cripple its corporate rival.)

Despite its criticisms of the initiative process, the timber industry proposed its own law because "the other initiatives didn't provide significant amounts of balance," says Eckery. "Opposing those initiatives wouldn't have made public concern go away, so we elected to become an agent of change."

Other timber-industry officials concede privately that the Forests Forever proposal will pass, and that their only hope lies in polling more votes than their opponents. "The industries don't care about the reforms in their initiatives," says the Sierra Club's Carl Pope. "They just want the poison pill at the end that invalidates the others. I don't think the public will be fooled, but you can't be sure."

Pope draws some optimism from the insurance initiatives that flooded

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California's 1988 ballot. Although the insurance industry spent $90 million and consumer activist Ralph Nader's group spent only $1.3 million, Nader's initiative prevailed. And the state's 1986 toxics measure passed despite being outspent five to one. Pope's conclusion: "If the public has strong feelings about an issue, it will figure out which side it's on."

Yet initiatives aren't necessarily resolved on election day. Nader's insurance measure has been mired in litigation since it passed, the Bush administration is already threatening to pre-empt Big Green's pesticide regulations if voters approve them, and a successful Forests Forever will surely be challenged in court. But these snarls won't undo the referendum process, says Dan Sullivan, chair of Sierra Club California. "Voters are fed up with those who block initiatives, not with the initiative process."

SETH ZUCKERMAN *is a writer in Northern California.*

Default or Deliver?

The World Bank promised to mend its lending ways, but over the sound of rustling paper can be heard the chainsaw's buzz.

Dena Leibman

BY THE TIME 1987 rolled in, Barber Conable had a major headache. As president of the World Bank, Conable was responsible for financing projects in developing countries that would prod those nations toward self-sufficiency and economic health. But disclosures by environmental and human-rights organizations had revealed a different scenario: Where World Bank money flowed in, ecological and social havoc often followed.

In March of that year, swayed by mounting international pressure and congressional investigations of environmental abuse, Conable announced sweeping reforms within the World Bank. Quoting Mark Twain, he noted that "'Nothing so needs reforming as other people's habits.'" He went on to say that "the Bank will begin by reforming its own."

Conable pledged to expand his environmental staff (then just four out of 7,000 employees) and promised a "top-level environment department" to set policy and conduct research. He committed significant financial and staff resources to forest-conservation projects, and, in a concession long sought by environmentalists, pledged greater involvement of citizen-based non-governmental organizations (NGOs) in Bank policymaking.

In the ensuing three years, Conable has made good on some of his prom-

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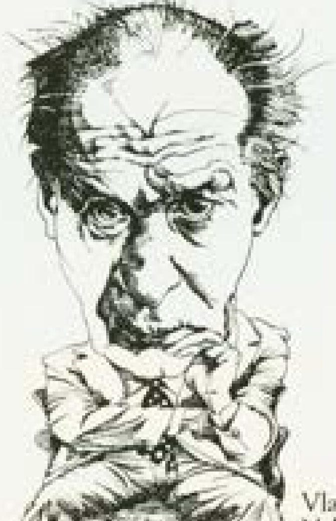
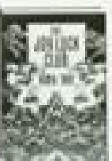


Vladimir Nabokov



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ises. The Bank now claims to have an environmental staff of about 100, and has withdrawn funding from several development debacles. But as the Bank's support of other disastrous projects continues, it's clear that old habits die hard.

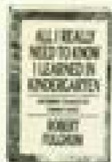
In May, representatives from the Sierra Club, Friends of the Earth, the Environmental Defense Fund, the National Wildlife Federation, and other NGOs met in Washington, D.C. (as they regularly do), to discuss the environmental progress of the World Bank and other foreign-aid institutions. By meeting's end, the participants had found a common denominator of complaint: The Bank still listens least to those who will be affected most. "Until the Bank heeds the voices of the people who have to live with the results of its projects," says Sierra Club Washington representative Cathy Fogel, "its claim of support for sustainable development is mere lip service."

DAVID DANOY

Work proceeds on a World Bank project in India's Narmada River Valley.

Apparently the Bank wasn't listening in Brazil, where for years it funded the Polonoroeste colonization project in the Amazon Basin. The 500,000 settlers who moved into the basin deforested an area the size of Great Britain, only to watch their crops wither in the tropical-forest soil. In 1987, Conable admitted that the Bank had "stumbled . . . misread the human, institutional, and physical realities of the jungle and the frontier."

Now the Bank has proposed a new loan for the Brazilian state of Rondônia, hoping to heal the wounds caused by Polonoroeste. By stipulating that agricultural development be accompanied by protection of the rainforest and tribal lands, the Bank is



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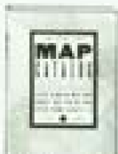

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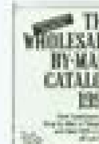

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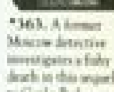

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basing a loan on environmental rather than economic considerations—for the first time.

However, according to Philip Fearnside of the National Institute for Research in the Amazon, located in Brazil, World Bank and Brazilian officials seriously undermined the plan last winter. During meetings in Washington, D.C., the Bank pushed forward with the loan even after Brazil revoked establishment of the Uru-eu-wau-wau Indian reserve (thereby threatening the tribe with extinction) and provided for "feeder roads" into agricultural areas—roads that could lead to the loss of more rainforest. Fearnside points out that these last-minute changes are prime examples of the way the Bank ignores local input. "People must be on top of the World Bank through the whole process," he says.

The Bank repeated its mistakes in Indonesia, where it funded a project that involved moving millions of people from the densely populated island of Java to the nation's outer islands. The government neither provided adequate services for the settlers nor prepared them for the poor quality of the tropical soil. Tensions between ethnic groups from Java and the islands' indigenous peoples often led to violent confrontations. The people affected were not consulted before the Bank decided to fund the project.

While the Bank has said that it will not fund new resettlement in Indonesia's pristine rainforests, it is taking part in the country's Tropical Forestry Action Plan (TFAP). Some environmental organizations charge that TFAPs, touted as conservation plans designed to halt deforestation, are just thinly veiled attempts to garner money for commercial exploitation of tropical forests. "Indonesia is losing more moist tropical forest each year than any other Asian country," says the Sierra Club's Fogel. "Yet studies used in developing its TFAP have placed little emphasis on non-market forest products, local communities, or conservation. The studies have not been made available to the public. And, although

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they were supposed to be included in the TFAP process, local communities have had no input."

The Sierra Club and other groups have called for a halt to international funding of TFAPs. Pat Coady, U.S. Executive Director to the World Bank, says, "If asked to vote today, I would say let's have a moratorium."

The Bank's neglect of NGOs and local people has reached tragic proportions in India, where the Bank is funding a vast system of dams along the Narmada River. The project has met massive resistance from the thousands of rural poor who will be displaced. At a congressional hearing last October, Vijay Paranjpye of the Indian National Trust for Art and Cultural Heritage testified: "The people are not allowed to articulate their concerns. They have no voice in the matter."

Coady bemoans his institution's process—or lack thereof. "If the World Bank had gone in early and clearly provided alternative and adequate land, they probably wouldn't have met with the kind of opposition they have."

That "kind of opposition" led Japan to withdraw its support of the Narmada River project, but the World Bank continues to pour in money.

The Bank has committed itself—on paper, at least—to environmental reforms undreamed of ten years ago. But it's an arduous journey from the desks of environmental department staff to developing countries thousands of miles away. "Environmental reform in the Bank is still a function of outside pressure," says Stewart Hudson of the National Wildlife Federation. "As soon as we leave, it will be business as usual."

To keep up that outside pressure, last year the Sierra Club supported legislation that would spur the Bank toward more meaningful reform. Sponsored by Representative Nancy Pelosi (D-Calif.), the law, which goes into effect in December 1991, requires borrowing countries or lending institutions to prepare assessments for projects expected to have significant environmental impacts. These assessments are a condition of U.S. support, and must be made available to affected groups and local NGOs.

But as Barbara Bramble, international director of the National Wildlife Federation, points out, "Even with the reforms in place, the kind of sustainable development we have in mind is unlikely. There are limits to how environmentally or socially sensitive big institutions can be. They were set up to do large-scale development, which by its very nature causes ecological harm, dislocation, and social disorder."

The question is whether or not the Bank is capable of changing *its* very nature. Conable's 1987 resolutions were impressive, and his quotation of Mark Twain humble, but the point of Twain's remark sounds loudest: No one's habits are harder to reform than one's own.

DENA LEIBMAN *is editor of* Conservation 90, *the environmental digest of the National Wildlife Federation.*

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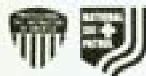

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In 1988, the Pentagon concluded that many of its facilities were too suffocated by urban congestion or simply too antiquated to perform their desired functions. A commission appointed by the Secretary of Defense therefore targeted 85 "undesirable" bases for closure. But the commission also determined that the military needed more land to satisfy its training requirements, especially land in sparsely populated areas. As a result, the Defense Department is now pursuing the acquisition of up to 4.5 million acres of public and private lands in the United States, and plans to log century-old forest acreage in West Germany. The additional turf would be used by Army, Air Force, Navy, and National Guard units to test a new generation of armaments.

Not just another pretty forest: Camp Shelby, where the tortoise meets the tank.

In the past two years, approximately 20 bases have been targeted for additions by the military. All told, the Defense Department is seeking an 18-percent increase in its landholdings—the largest base expansion since World War II.

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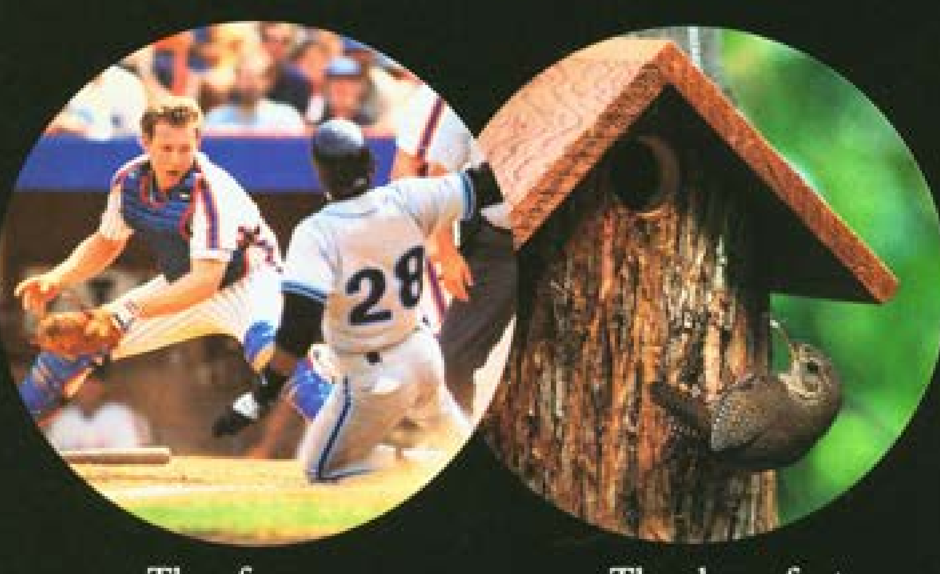

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by 281,000 acres in order to conduct tank maneuvers. In Nevada, the Navy hopes to add 314,000 acres of mostly Bureau of Land Management lands to its Fallon Naval Air Station. In Kansas, the Army is eyeing 82,000 acres of farmland for its Fort Riley complex. And the National Guard in Maine wants to acquire 720,000 acres of private property near Bangor for battalion-level maneuvers.

These and other proposed military land acquisitions, all at different stages of planning, must earn congressional approval. Most of them will require environmental impact statements. But critics watch in dismay as the proposals stack up in Congress.

"We're seeing a general pattern of expansion that in light of recent political developments seems somewhat out of line," says Stanford University biologist Anne Ehrlich, who chairs the Sierra Club's Committee on the Environmental Impacts of Warfare.

"For years, the military has been telling us that the Russians are coming," concurs Grace Bukowski of Citizen Alert, a Nevada organization that opposes military expansion in the state. "Now we're asking, where's the enemy?"

"The Russians haven't gone away," responds Doug Hansen, a spokesman for the Defense Department. "We have to have some level of preparedness."

Hansen points out that old bases were designed for weapons developed during the Second World War. "We need to get out of places where we're tightly constrained. We've got new weapons that can shoot farther and go faster, and combat tactics that require more space."

But military operations at U.S. bases both at home and abroad are drawing increasing heat from ranchers, hunters, hikers, and wildlife defenders who don't want their public lands turned into military playgrounds.

In northern Michigan, a group of anglers is working to squelch a National Guard proposal to expand tank maneuvers and bombing practices at Camp Grayling near the Au Sable and

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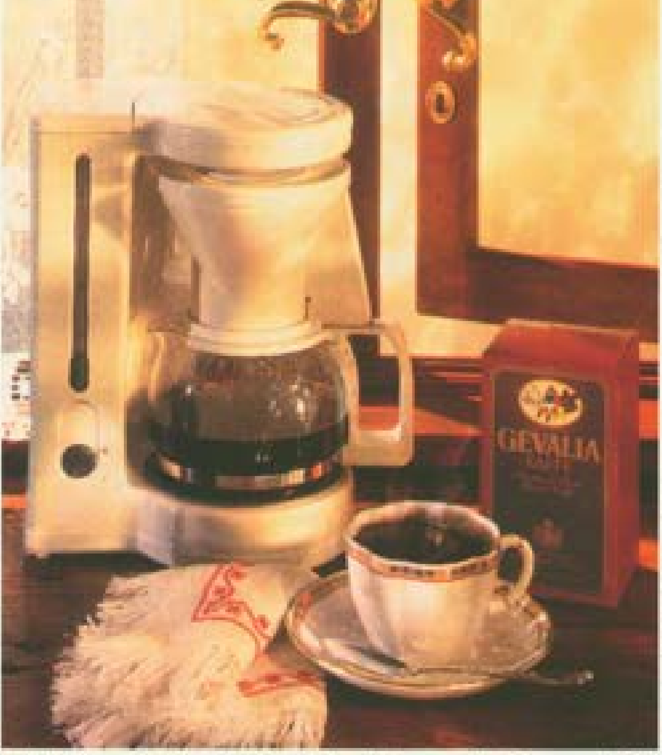

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Manistee rivers. Already, aircraft, armored vehicles, and artillery are destroying the habitat of the endangered Kirtland's warbler, says local activist Edward McGlinn.

Ranchers and environmentalists in the West have at least temporarily stalled the two largest base expansions. Responding to constituent anger, Idaho's congressional delegation told the Air Force to rethink its plan for adding 1.4 million acres to its Saylor Creek Bombing Range in the high desert of the Bruneau-Jarbridge Plateau. And in Montana, where the National Guard had hoped to acquire 718,000 acres for war games, the state refused to finance a required environmental impact statement, thereby tabling the proposal.

In southern Mississippi, environmentalists are opposing the state's National Guard proposal to add 32,000 acres of De Soto National Forest to its Camp Shelby domain. In exchange, the Defense Department would give the Forest Service 16,000 acres of less valuable grassland in Colorado.

"This is an unprecedented land grab," says Louis Miller, conservation chair of the Sierra Club's Mississippi Chapter. Club activists are working to convince state officials that the land exchange would exacerbate environmental problems in the national forest, part of which has already been damaged by the Guard's training activities. Miller notes that the once-forested landscape now "looks like the surface of the moon."

Joining the Sierra Club in opposing Camp Shelby's expansion is Citizens Against the Land Swap, a group based in the town of Brooklyn, Mississippi. The organization's founder, retired Army Lieutenant Colonel Walter M. Denton, decries the Guard's plan, noting that its tanks "mash into the ground, carving 12-foot-wide trails. One tank goes through, then the others follow; when the rains come there's immediate erosion." And if the Guard annexes more forestland, he argues, chances are high that some of the area's red-cockaded woodpeckers, gopher tortoises, and eastern indigo snakes—all endangered species—would be

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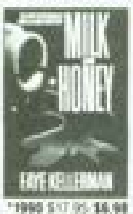

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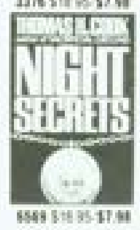

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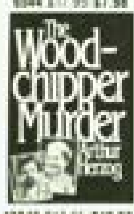
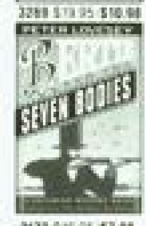

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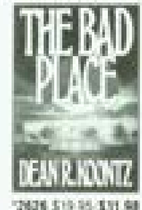
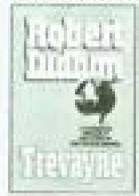

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disturbed or injured by tank activities.

The Guard claims that wildlife management in De Soto Forest would improve under its charge, an assertion the Club's Miller dismisses as "unadulterated hogwash." Tanks and wildlife aren't compatible, he says.

Perhaps the most heated protest against the Pentagon's land-acquisition scheme has come from the citizens of Viernheim and Lampertheim, West Germany. A 9,880-acre forest close to the two towns is the only woodland remaining in what is now a metropolitan area. The U.S. Army confiscated more than half of the forest for its use in 1945. Now it plans to cut down some 6,000 trees there in order to expand its tank maneuvers. Last October hundreds of West German protesters threw rocks at U.S. tanks and chained themselves to fences. Fifty thousand area residents wrote letters castigating the American army, and the mayor of Viernheim issued an appeal for help to American conservationists and politicians. "It is not good politics to declare on one hand that the 'Cold War' has ended," he wrote, "and then proceed to wage an ecological war in the Viernheim forest!"

But the battle to save the Viernheim/Lampertheim forest will be especially difficult. The National Environmental Policy Act, which mandates environmental impact studies for major development projects in the United States, does not apply to actions by the U.S. outside its borders (although legislation pending in Congress could change that). Meanwhile, the town of Viernheim conducted its own study, which concluded that the forest has already been severely damaged by the military and that any further impact would entirely destroy it.

"This kind of steamrolling undermines America's effort to reduce its military presence in Europe," says Sierra Club International Representative Larry Williams. "Peace is breaking out all over, but the Army is just not getting the message." ■

EDITH PEPPER *is a former* Sierra *editorial intern.*

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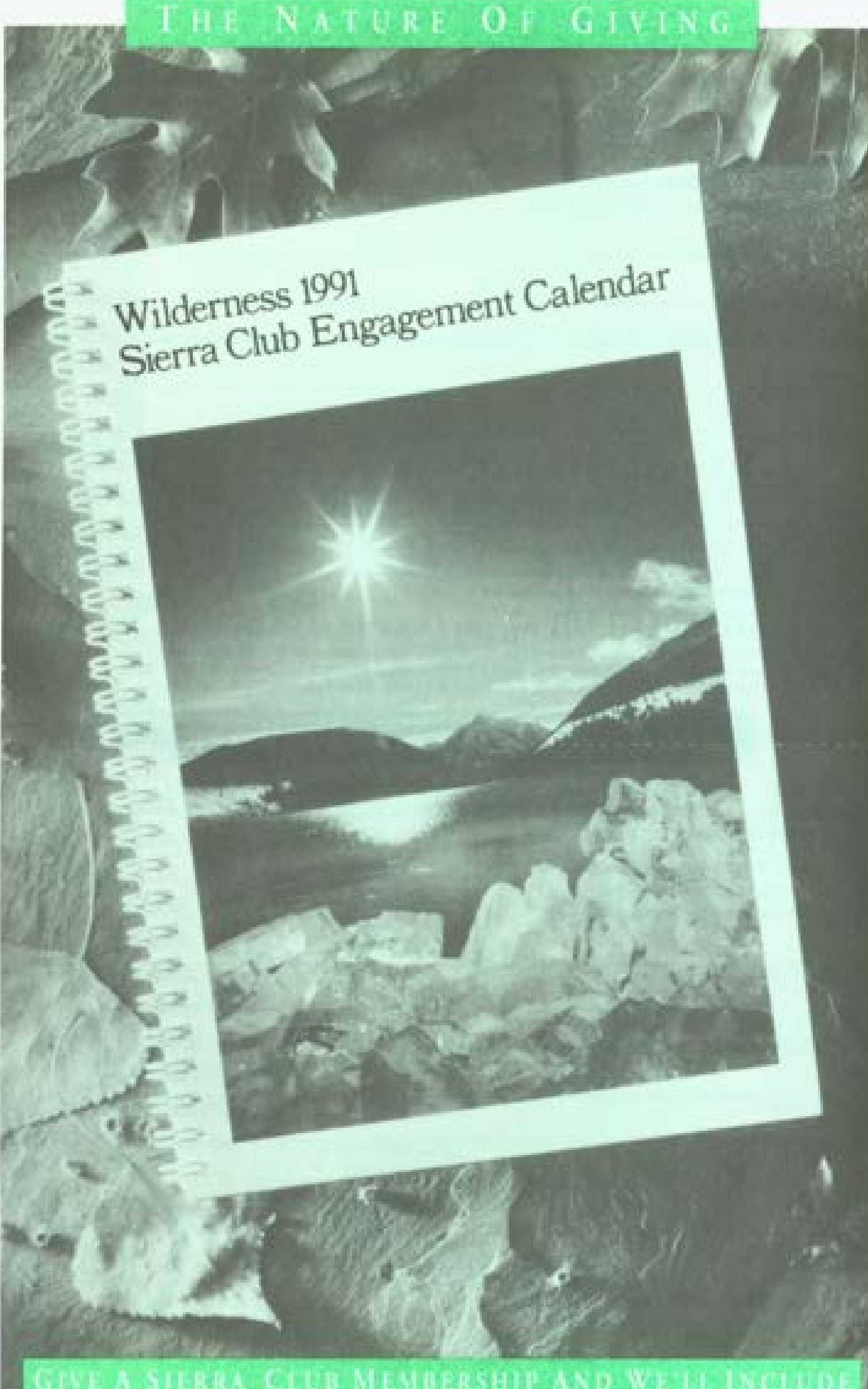
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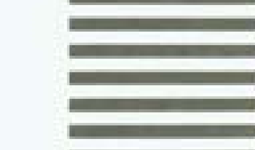

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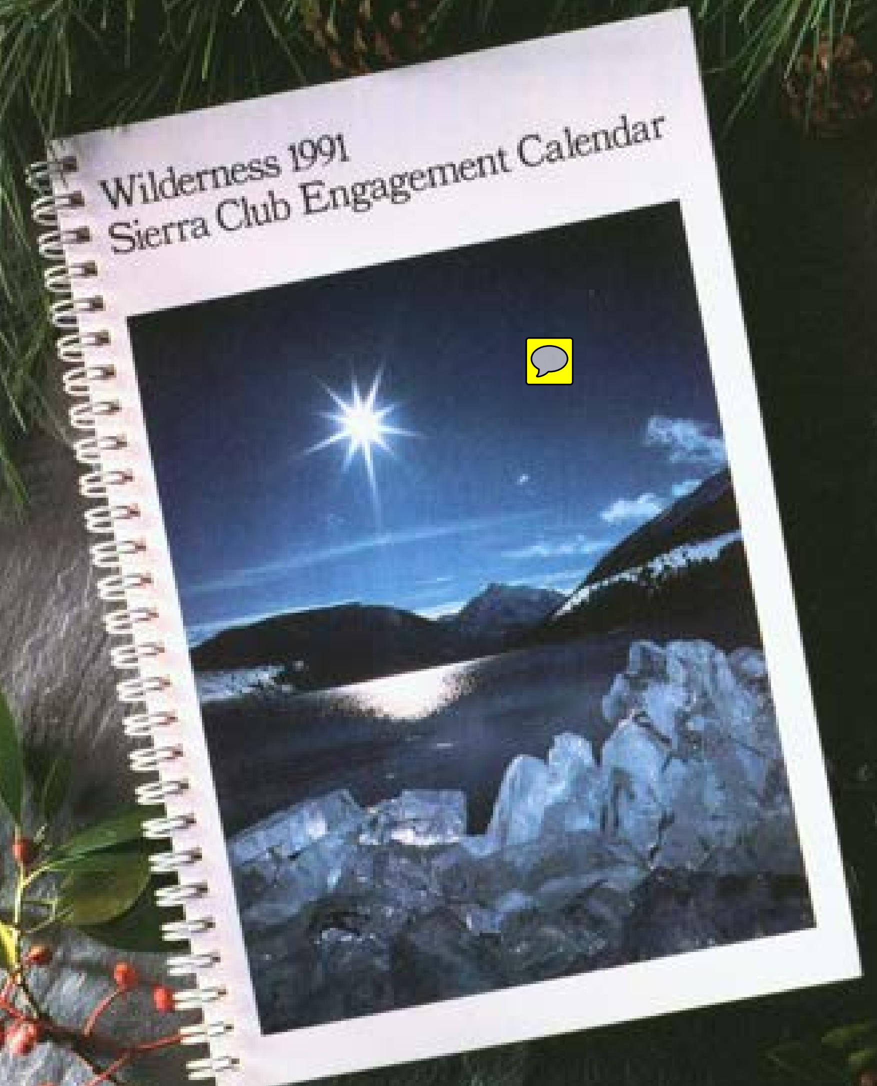

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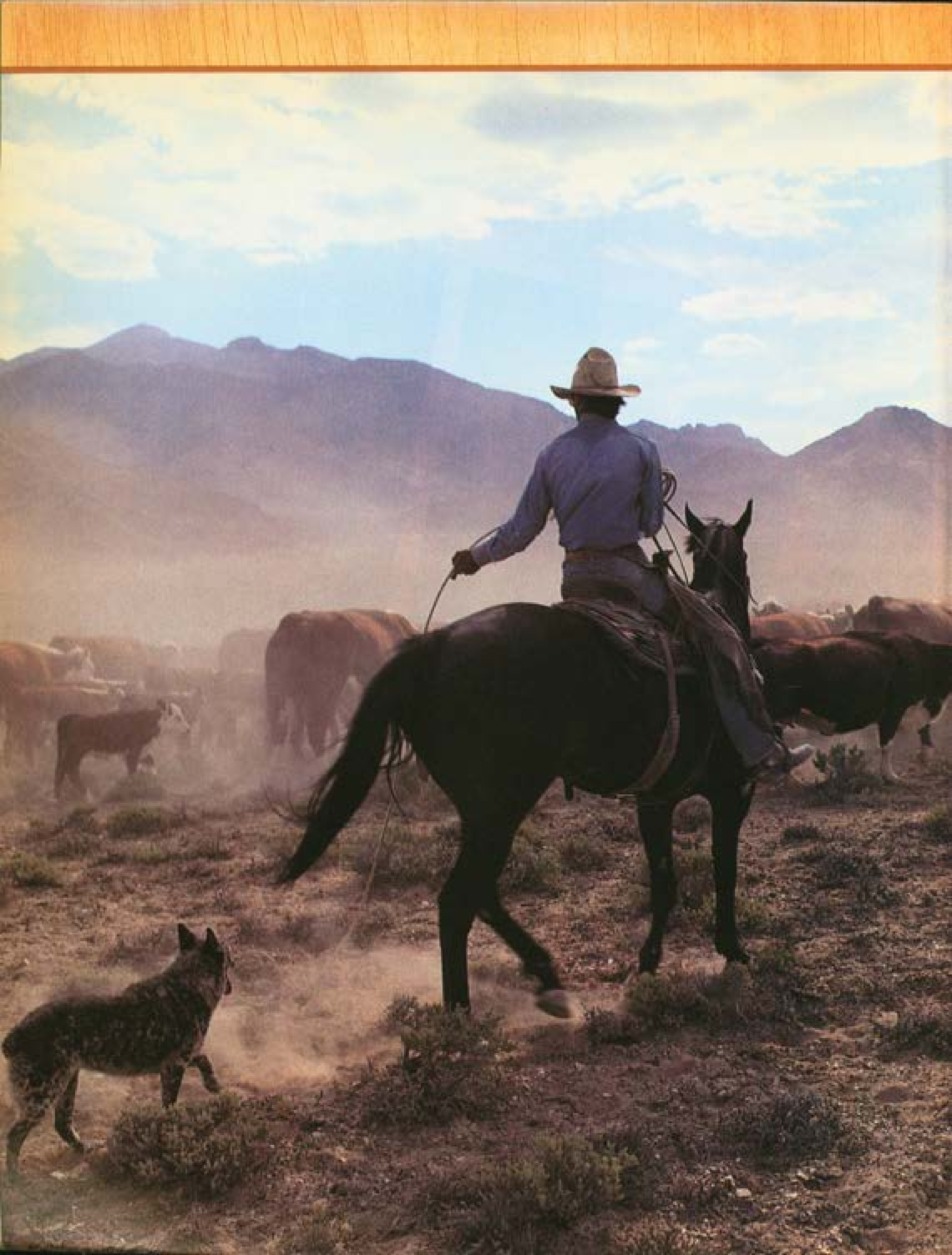


THOROUGHLY COWED

There're some who wish these fly-bitten, resource-gobbling, stream-fouling tortoise-stompers really were heading for the last roundup.

JOURNALISTS WHO RUMINATE in print about rangelands risk losing their readers. These vast expanses of the American West aren't often touted in the standard phrases of nature-praise, and citizens do not as a rule hanker to spend vacations frolicking barefoot through the cowpied landscape of their imaginations. ★ Yet the steer chows down with the lamb in some of our best-loved places: wilderness areas, wildlife refuges, national forests—even national parks. John Muir called sheep "hooved locusts" a century ago as he watched them move into Sierran meadows each spring to fatten on the verdant growth. He'd be less than delighted to learn that many of those meadows are still sacrificed to livestock today. Other lands as beautiful, from the Rocky Mountains to the Sonoran Desert, are shockingly overgrazed as well. ★ Why no hue and cry to aid the range? The persistent myth of the cowboy retains its power, of course, so that to catalog his sins is to risk seeming un-American. But it's also true that the threats rangelands face seem soporifically benign at first glance. Old Bossy's dewy-eyed stare fails to stir the same measure of fear and anger as a chainsaw, a bulldozer, or John Sununu. Moved to confusion (or boredom) by a litany of rangeland ills, the general reader turns the page; the activist turns her or his energies to saving something more "majestic"—the mountains, forest, or seaside. ★ But the public ignores grazing issues at the West's peril. Roughly a third of the land area in the 11 western states is rangeland managed by state, Indian, or private interests. Another third is under the aegis of the U.S. Forest Service and the Bureau of Land Management. (Though only 17 percent of western ranchers graze livestock on public lands, they are by far the dominant users of more than 250 million acres.) In other words, two-thirds of this vast region is at risk. ★ Fortunately, some of the dust-and-stubble stereotypes that have stuck unfairly to the overgrazed West have broken down in recent years. Biologists now know that an acre of streamside habitat is as valuable as an acre of redwoods. Conservationists have worked with scientists and economists to identify a number of interlocking problems that have sheep and cows (and, yes, cowboys) at their source. And visitors to some of the nation's most scenic public lands have learned, the hard and often disgusting way, that cattle and camping just don't mix. ★ Still, America's land managers continue to cede control of our rangelands to the livestock industry. This lack of federal backbone, more than anything else, has made activists angrier and more desperate than they were a decade ago: Even the most patient are calling for revolutionary changes in the way the agencies do business, while the impatient are calling for the outright abolition of livestock from the public lands. ★ Some observers predict an all-out range war ahead, assuming that both ranchers and federal managers will resist the increasingly impassioned demands of the reformers. That may happen, given that dollars as well as acres are at stake. But war or no war, we think it's a conflict important enough to make the least cowburnt reader sit up and take notice. —*the editors*

STEPHEN KASPER

THERE IS A MAN in eastern Montana who enjoys having fresh-squeezed orange juice every morning. It's so important to him that he's planted several orange trees in a greenhouse and pays a hefty heating bill to keep them alive through the winter. Though he can grow oranges in Montana, he'll never be able to produce this subtropical fruit commercially—it's not worth it when you can grow oranges in California or Florida for far less.

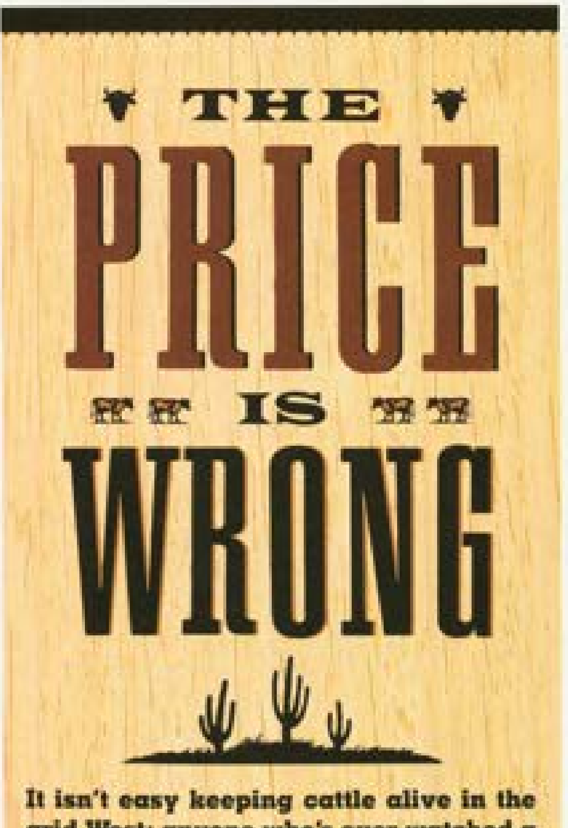
But let's say this man is enterprising. Say he is able to convince the federal government to lease him some western public lands for a few cents an acre.

Then let's suppose he is allowed to remove coal from these lands to heat a much larger greenhouse built with subsidized timber from the national forests.

Suppose he gets the federal government to build an irrigation canal from the Yellowstone River to provide him with the water that citrus fruit requires—all in the name of local economic development.

And let's say he can get some kind of price support that would guarantee him a minimum return for his efforts.

With a large enough subsidy—and if no one asks him to pay for the environmental costs of the coal mining, water development, and timber harvesting—this man just may make a buck growing oranges in Montana.



It isn't easy keeping cattle alive in the arid West; anyone who's ever watched a cowboy movie knows that. What makes it possible at all are sheepish administrators and piles of your tax dollars.

★ ★ ★

RAISING CATTLE in Montana is only slightly less absurd than growing oranges there. A species adapted to a well-watered, predator-free environment, the cow is alien to the western United States. In Florida's moist climate you can raise enough forage for one cow on a single acre of ground. In Montana you may need at least 100 acres; in Nevada, about 220. Bigger spreads usually mean more losses to predators—unless you have guard dogs or can afford to hire herders—and higher costs for bringing supplies from town. Western operations also require more water development than their eastern counterparts: pipelines, windmills, stock ponds, and irrigation systems.

★ BY GEORGE WUERTHNER ★

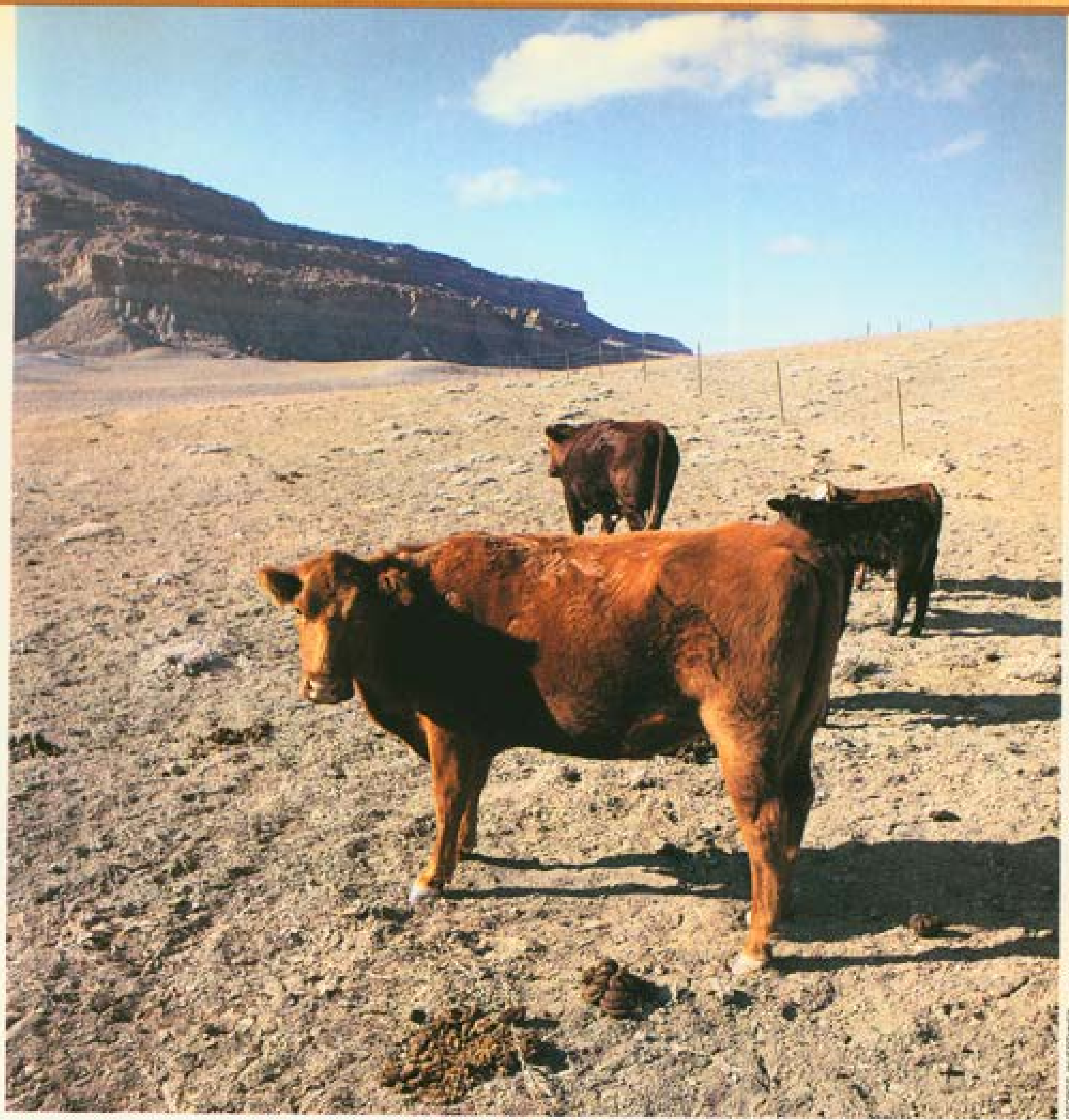
Given these disadvantages, how do western ranchers compete with producers in the East who raise their cattle almost exclusively on private lands? The answer is simple, especially for those who ranch on the public lands: welfare. In general, western ranchers don't pay the full costs of livestock production, whether those costs are defined as economic or environmental. The high price of ranching in the West is largely paid by the taxpayers.

In 1989, livestock operators leased 267 million acres of Bureau of Land Management (BLM) and U.S. Forest Service land in the West, an area larger than the 14 eastern seaboard states. Western ranchers paid $35 million for the public lands they used that year, which works out to about one sixth to one eighth as much as they might have paid to lease equivalent private land. Grazing fees for the same year covered less than 45 percent of the federal costs of range management and improvement.

Near Oregon's Whitehorse Butte, for example, one rancher pays an annual fee of $18,000 for the use of 126,000 acres of public land. To mitigate the environmental impacts of this ranch, the BLM plans to build a water pipeline, drill a well, and construct 16 miles of fence. Dollars weren't mentioned when the agency announced its decision to go ahead with the project in July, but $174,000 was the pricetag the agency had put on an earlier, similar version of the plan. Annual maintenance costs for the pipeline had been set at $14,000.

For tolerating and paying for most of such developments, the public doesn't even receive all of the $18,000 annual fee in return. By law, half of all grazing fees must be used to finance more "improvements" like the pipeline. Another 12 percent goes to the county grazing board. After these deductions, the public treasury receives only $6,800—about five cents an acre.

The taxpayers also help pay for stock ponds, cattle guards, "open range" signs, herbicide spraying, seeding,



GEORGE WUERTHNER

and even dragging chains across the land to eliminate trees and brush. The public-lands rancher may be required to pay part of the cost or donate his labor, but overall the major expenses are borne by the public.

* * *

UNFORTUNATELY, improvements and administration may be the least expensive items on the taxpayers' grazing bill. "The impact of countless hooves and mouths over the years has done more to alter the type of vegetation and landforms of the West than all the water projects, strip mines, power plants, freeways, and subdivision developments combined," wrote Philip Fradkin in a 1979 *Audubon* article. "The changes in most cases are irrevocable."

It's not difficult to find data that back up Fradkin's assertion. According to a 1989 report by the National Wildlife Federation and the Natural Resources Defense Council, 68 percent of the 138 million BLM acres recently inventoried were, by the agency's own definition, in "unsatisfactory" condition. "Poor livestock grazing practices continue to be endemic to the vast majority of those lands," according to the report.

No other commercial use devastates as many vital

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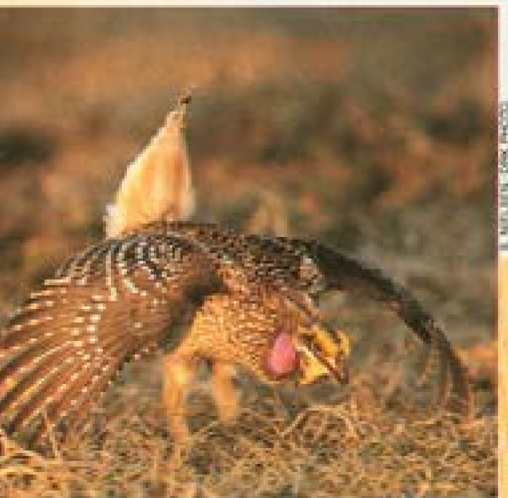


B. NIELSEN: DRK PHOTO

Grazing on the right side of this fenceline in Utah's Fish Springs National Wildlife Refuge has made nesting waterfowl vulnerable to predators. Cows and sheep graze on 151 of the nation's refuges—even though they often come in conflict with wildlife. Elsewhere in the West, species as different as bighorn sheep (top left) and sharp-tailed grouse (left) have proven no match for livestock.

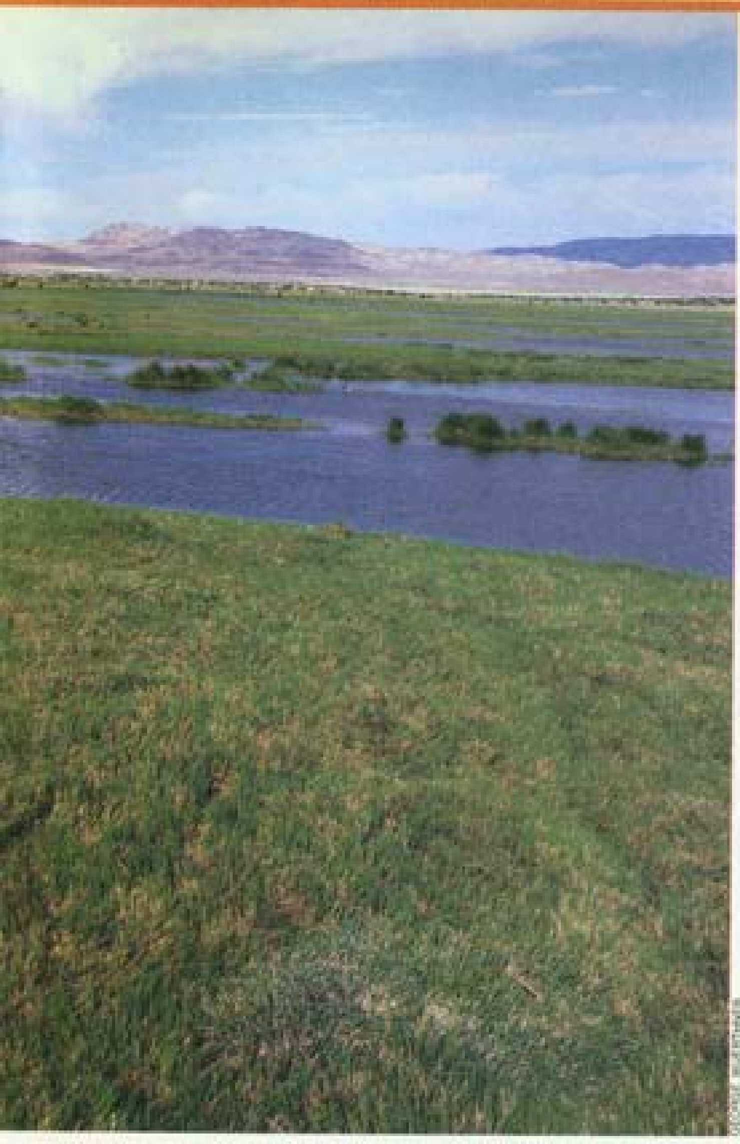
streamside areas—areas that Tucson-based consultant Steve Johnson calls the "thin green lines" of biological productivity in the desert West. Bureau of Land Management researchers in arid southeastern Oregon report that 82 percent of the 363 animal species in the region are directly dependent upon streamside (riparian) areas for their survival. In Arizona, 75 to 80 percent of the state's wildlife species need riparian habitat, according to Johnson.

Yet the West's streamside environments have been rapidly succumbing to civilization. According to the Arizona State Parks department, 90 percent of the original riparian ecosystems in Arizona and New Mexico are gone. A 1988 General Accounting Office (GAO) report cited the BLM's own bleak assessments: 90 percent of the 5,300 miles of streamside habitat managed by the agency in Colorado are in unsatisfactory condition; 80 percent of the Idaho BLM's riparian lands are degraded. Similar figures could be quoted throughout the West.

Highway construction, housing development, and water impoundments have all contributed to these losses, but "poorly managed livestock grazing is the major cause of degraded riparian habitat on federal rangelands," according to the GAO.

"Overgrazing in riparian habitats leads to erosion and stream sedimentation," Johnson says. "Livestock trample the denuded banks, widening channels and raising water temperatures. The extent of riparian abuse is often so severe that both water and associated vegetation disappear entirely, transforming a perennial, wooded stream into a barren arroyo."

Terlingua Creek, a major tributary of the Rio Grande in Big Bend National Park, was described by early Texas settler James Gillett as "a bold-running creek, lined by cottonwood and full of beaver." But grazing and wood-gathering before the park was established in 1942 left only 221 native cottonwoods in the entire park, and today the banks of the creek are nearly devoid of trees. The once "bold-running" creek is now a wide, braided channel that


GEORGE WUERTHNER

barely flows except during flash floods. As might be expected, most of the beaver are gone.

The loss of cottonwoods here and elsewhere in the West has also led to population declines of birds that require large trees for nesting and roosting sites, such as bald eagles and some species of hawks, and of cavity-nesting birds such as woodpeckers and bluebirds. All told, this devastation of western streamside forests is at least as important ecologically as, say, the widely publicized loss of old-growth forests in the Pacific Northwest.

Other riparian and upland lifeforms on the casualty list include:

★ Game birds: Grazing has reduced populations of sharp-tailed grouse, sage grouse, and masked bobwhite.

★ Songbirds: A 1984 study at Oregon's Malheur Wildlife Refuge showed that livestock grazing "significantly decreases the amount of shrubs and both [song]bird abundance and species richness."

★ Fish: In Arizona, five of 32 native species of fish have been wiped out. Of the remaining 27 species, 21 are listed as threatened, endangered, or under study for such listing. Although other factors are implicated in these losses, trampling and denuding of stream banks by livestock (which compact the soil and leave it open to erosion) are major contributors to nearly all of the declines.

★ Plants: According to the GAO, more U.S. plant species are wiped out or endangered by livestock grazing than by any other single factor. Of the five plant species placed on the national endangered species list in August and September of 1989, for instance, three were victims of grazing.

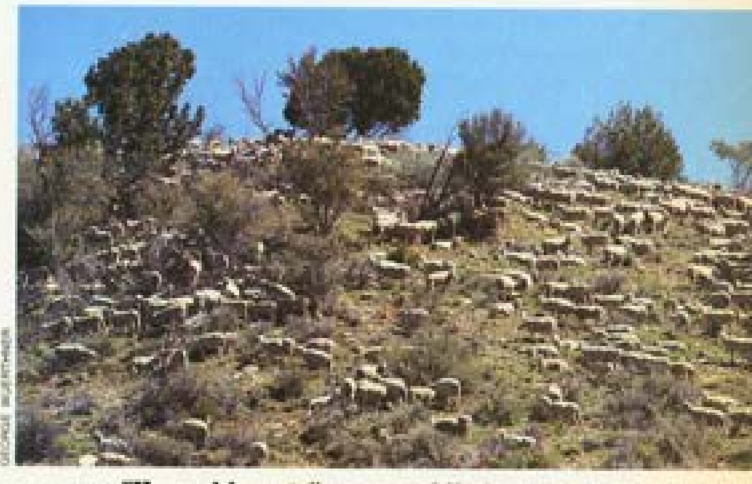
★ Saguaro cactus: Though Saguaro National Monument was set up in 1933 to protect this symbol of Arizona's Sonoran Desert, grazing was allowed to continue there until 1978. As a result, the plant was almost eliminated from the eastern portion of the monument.

★ ★ ★

THE VAST, MUNCHING HERDS also consume a huge share of what is perhaps the West's most treasured resource—water. Nearly 90 percent of the water taken out of streams in the Colorado River basin is used for irrigation to grow hay and other crops for livestock, according to a 1982 *Living Wilderness* article. To get this water to the fields often requires elaborate and expensive systems of dams, canals, and pipelines—all subsidized by taxpayers. Bureau of Reclamation statistics indicate that taxpayers paid $534 million to deliver water to western irrigators in 1988 alone. Urban dwellers pay twice for this gift to the livestock industry, once through taxes and once through their utility bills, where higher electrical rates subsidize the low rates paid by irrigators.

Lower flows in streams and rivers usually mean higher water temperatures, which may be lethal for some aquatic species. In addition, pollutants such as pesticides, fertilizers, and mining wastes are more concentrated. The result is a devastated aquatic ecosystem.

The presence of livestock on public lands forces wildlife


GEORGE WUERTHNER

"Hooved locusts" graze public land in Idaho.

to compete for space, water, and cover. But for some species the fiercest fight is for forage. Despite the hoopla by state and federal agencies over their success in expanding herds of deer, elk, moose, bighorn sheep, and antelope, the truth is that populations of most big-game species have shrunk dramatically since white settlers first arrived in the West. "Bison, bighorn sheep, and pronghorn antelope have declined the most," says Utah State University ecologist Frederic H. Wagner, "perhaps existing at less than 5 percent of their primeval numbers." Deer, whose numbers have increased, are the sole exception.

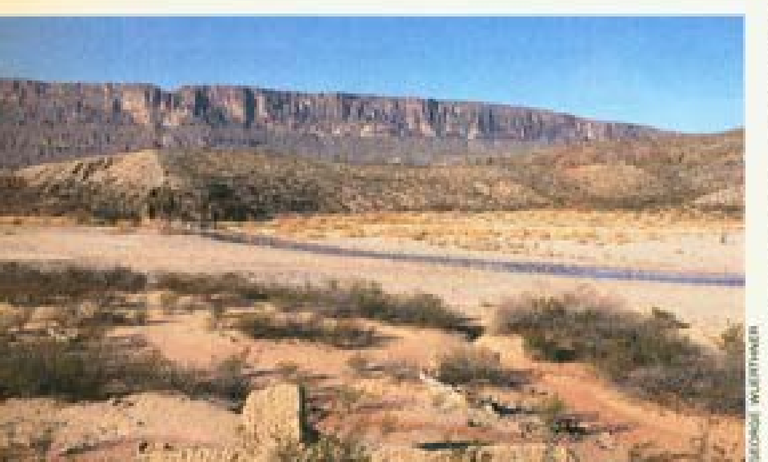
Among the prime factors in the shrinking of big-game herds are highways, subdivisions, dams, hunting, timber harvesting, and, of course, livestock grazing. Though big-game populations will never again approach their primeval heights, livestock help keep them far below their modern potential. A look at the way a typical BLM district rations out its grazable plants tells the story: In the Burns District in Oregon, about 252 million pounds of herbage are allotted to livestock, while less than 8 million pounds are allotted to wildlife.

Even small animals with dainty appetites have been affected. The desert tortoise, for example, needs only 23 pounds of plants a year. Yet in the California Desert cattle have helped make tortoises what the Endangered Species Act defines as a "threatened" species by trampling them and taking their food.

Less obvious are the impacts of livestock on wild creatures not typically thought of as competitors. Few people realize that grizzly bears are largely vegetarian, and that livestock grazing can significantly shrink their food supply. The resulting nutritional stress may reduce a bear's fertility —or the chances of its cubs' survival. In some cases the bear is forced to wander farther to obtain food, thereby increasing the likelihood of a lethal encounter with humans.

Sometimes wildlife is hit even more directly. In 1987 alone, the U.S. government killed 250,000 wild animals that farmers and ranchers had declared pests—everything from prairie dogs to grizzly bears. The killing was primarily done by an arm of the Agriculture Department called the Animal Damage Control division (ADC), which was funded at $29 million in 1990.

The losses to hikers, campers, and other recreational users must also be added to any calculation of the cost of livestock grazing. Do the ranchers who condemn predators compensate people who would prefer wolves and grizzlies on their public lands? I haven't gotten my check yet. Do ranchers somehow make amends to those of us who don't enjoy walking and camping in cowpies? They do not. Livestock operators pollute the public lands as freely as if they owned them. And the real owners—the public—are expected to accept the contamination of their outdoor sanctuaries by filth, flies, foul water, and fences.



GEORGE WUERTHNER

Logging and grazing have transformed Terlingua Creek in Big Bend National Park from an oasis lined with cottonwoods into a bleak desert wash.

* * *

People who have calculated the high price of livestock

JEFF FOOTT

JEFF GNASS

GEOFF MANASSE / ALLSTOCK

Sheep and cow casualties: Prairie-dog populations (top) have been devastated in every western state by government poisoning programs designed to aid ranchers and farmers; the desert tortoise (above), now an officially designated threatened species, can't compete with the cows and sheep of the California Desert; the saguaro cactus (left) has difficulty reproducing where livestock feed on young cacti.

grazing on public lands inevitably arrive at the same puzzling question: In the face of all its negative consequences, why is it allowed to continue?

Livestock advocates say we need grazing to produce food. Yet public-land ranchers contribute only 2 percent of the nation's red meat. If meat production were the goal, the same investment in an area with higher rainfall would result in a much higher yield.

Others suggest that grazing on public lands is important to rural economies. Yet in most places this is not the case. Ninety percent of the stock in Montana, for example, is grazed on private land. According to a 1986 report of the House Committee on Governmental Operations, only 17 percent of the ranchers in the 11 western states actually use public rangelands, and most use them for only a portion of the year. If subsidization of rural communities is our goal, there must be better, less ecologically damaging ways to achieve it.

Such facts lead to questions of broader ecological scope. Why should cattle and sheep rather than bison, elk, and antelope graze our public lands? Is using scarce western water to produce hay for cattle feed really the best use of this resource? Do ranchers have a right to a predator-free environment on public lands? Why aren't federal agencies managing our lands primarily to preserve biodiversity, wilderness, watersheds, recreation, and scenic qualities?

Judging by the condition of public lands in the West, such a blizzard of questions is long overdue. It's not that livestock *can't* be raised with a minimum of environmental damage—it's that the cost of doing so in the dry lands of the West is extremely high. Are we willing to pay the price for livestock grazing in the West? Do we want to grow oranges in Montana?

George Wuerthner, *a former Bureau of Land Management botanist, has written and provided photos for nine natural-history books published by American Geographic, including* Big Bend, Oregon Mountain Ranges, *and* Idaho Mountain Ranges.

RIDING HERD ON THE RANGE

Unbridled Advocates of Grazing Reform

WHO YA GONNA CALL?

A woman who can deliver verbal knockouts in measured tones, Natural Resources Defense Council attorney Johanna Wald is seen as Darth Vader by many ranchers. She is most notorious for winning a 1974 lawsuit that forced the Bureau of Land Management to document, in 144 impact statements, the full spectrum of grazing abuses. To conservationists and some agency folk, however, Wald is a trusted friend, someone they call in the middle of the night to discuss their problems.

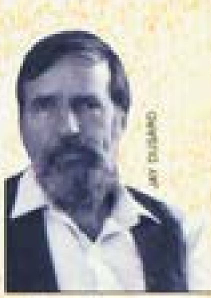
IRRITANTS— OR ROLE MODELS?

After 15 years in the ranching business, retired veterinarian Doc Hatfield and his wife, Connie, chat knowledgeably about their 400 cows. But they seem equally proud of their ecological expertise. "Times have changed, but maybe ranching practices haven't changed enough," Connie says. With some other ranchers the Hatfields have set up the Central Oregon Natural Resource Coalition to, as Doc puts it, "develop a coordinated resource vision" for a 1,500-square-mile patchwork of public and private lands that includes their ranch. "They're a thorn in my side," says activist Denzel Ferguson, who believes cattle in the West inevitably harm the environment. Other reformers are more enthusiastic: "We could use more like them," says Johanna Wald.

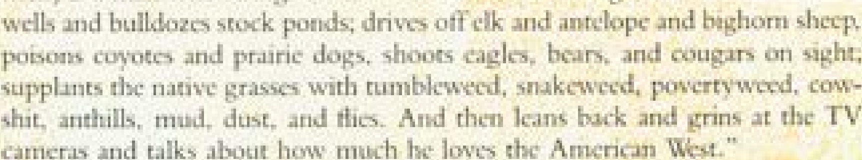
MAZE MASTER

A longtime Sierra Club volunteer, Reno resident Rose Strickland has, after years of wrangling, thoroughly mastered grazing's bureaucratic terrain. (See "Taking the Bull by the Horns," page 46.) She understands regulations, can cut through obfuscation, knows political pressure points, and—most important—has taught legions of activists these skills.

HIS WORDS WERE BARBED AND WIRY



Edward Abbey (1927–1989), author of many fiction and nonfiction books with environmental themes, gave range activists phrases they could never forget. He made his boldest attack on the livestock industry in a January 1986 *Harper's Magazine* article, describing Western public lands as "cowburnt" and ranchers as "welfare parasites." "Anyone . . . can see that the land is overgrazed," he wrote. "The rancher (with a few honorable exceptions) is a man who strings barbed wire all over the range, drills wells and bulldozes stock ponds; drives off elk and antelope and bighorn sheep, poisons coyotes and prairie dogs, shoots eagles, bears, and cougars on sight; supplants the native grasses with tumbleweed, snakeweed, povertyweed, cowshit, anthills, mud, dust, and flies. And then leans back and grins at the TV cameras and talks about how much he loves the American West."



ARCH ENEMIES, BEWARE

In March 1988, physicist and law professor Joe Feller hiked up Arch Canyon in southeastern Utah. Instead of the desert serenity he sought, he found "a battlefield—the vegetation had been cropped off nearly to the roots and the soil pulverized, with cowpies instead of shrapnel left behind." When he got back home, Feller began working to defend the befouled place, using the best tools available: the Bureau of Land Management's own regulations, standards, and guidelines. Two years later, he's still writing letters on Arch Canyon's behalf, doggedly following the agency through every step of its public-participation process. Has any piece of BLM grazing land ever received such intense scrutiny? Probably not—at least not yet. Feller's currently on the conference circuit, telling others how to protect their favorite piece of BLM land from excessive munching and trampling.

KEEP THEM DOGIES MOVIN'

When consultant Allan Savory came to the United States from Rhodesia ten years ago, he joined environmentalists howling about grazing's destruction of the West. But he scoffed at their cure: removing livestock from battered lands. "Relatively high numbers of heavy, herding animals . . . support the health of the very lands we thought they destroyed," he wrote in *Holistic Resource Management* (Island Press, 1988). The herds can be composed of natives such as buffalo and elk or imports such as cows and sheep, according to Savory, provided the animals are not allowed to linger too long in any one place. Savory's novel ideas and messianic style have been "more effective in creating discussion and stimulating research than all grazing professionals, academics, and environmentalists put together," says *High Country News* publisher Ed Marston. Conservation-minded ranchers are similarly impressed. Sierra Club lobbyist Debbie Sease refuses to see the controversial Savory as an ally, however: "I love wilderness, and he loves productive feedlots."

ON EVERY SAGEBRUSH SYLLABUS

Once the managers of a university-owned research outpost called the Malheur Field Station, Denzel and Nancy Ferguson were among the first to suggest in print that livestock should be removed from the public lands. The notion did not enhance their local popularity; soon after their first letter-writing campaign in the early 1970s they were tossed out of an Oregon dance hall "by a gang of five robust cowmen—considerably more force than was actually needed to eject one woman and a middle-aged college professor." But in the wider world, their warnings of impending range disaster have won them a small but devoted audience. Today their book *Sacred Cows at the Public Trough* (Maverick Publications, 1983) is considered required reading by grazing activists.

RANGE RAPPER

If you phone Jim Fish, prepare yourself for a lecture: "The livestock industry is destroying the West, and you, the American taxpayers, are footing the bill," his answering machine intones. But Fish—live—is more personable

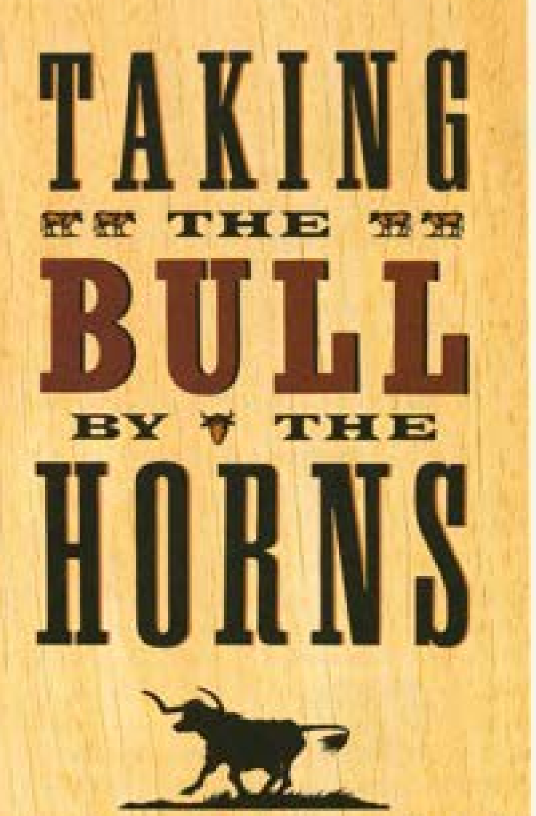
than his message; in fact, his southern charm and strong convictions have helped bring activists together to fight range abuses in an umbrella group called PLAN—Public Lands Action Network. (See "Fodder for Thought," page 49.) A chemical engineer and wilderness activist, Fish grew up in southwest Texas on—what else?—a ranch.

BEAT THE BOVINES

When Steve Johnson took charge of Defenders of Wildlife's Southwest field office in 1973, he wasn't particularly interested in cows. But then, he says, "I found that almost every environmental problem I dealt with had its roots in livestock grazing." He became one of the nation's most articulate spokespeople for range reform, advocating a livestock ban on public lands in the Southwest, where most areas receive less than ten inches of rainfall a year. "This land just doesn't have the forage base to support an exotic animal that eats six tons of plant material a year," he says. Now running Native Ecosystems, a Tucson-based consulting firm, Johnson hopes that someday the West "gets to the point where the political influence of the ranching community matches its economic contribution."

PROHIBITIONIST

"The American public suffers from apathy, sheeplike behavior, and a near-frantic cowboy/Western obsession," complains Lynn Jacobs in his book-in-progress, *The Waste of the West: Public Lands Ranching*. Jacobs earned his anti-grazing spurs running the Tucson-based organization Free Our Public Lands! (See "Fodder for Thought," page 49.) An intensely devoted researcher and a passionate advocate, he's the most visible leader in the "Cattle Free by '93" movement. And what might be the ranchers' response to that slogan? "Cattle Galore by '94," of course.



TAKING THE BULL BY THE HORNS

Conservationists have been wrangling politely with land managers for years—but have failed to halt overgrazing throughout the West. A veteran activist says it's time for tougher tactics.

★ BY ROSE STRICKLAND ★

My work on grazing issues grew, imperceptibly at first, from a love of wildflowers and a keen interest in exploring the remote, wild mountains and valleys of the Great Basin.

I soon discovered that cows and sheep had already beat me to the best spots. In fact, clean water and cowpie-free, level campsites were as scarce as the lands were beautiful. The lack of wildlife was disappointing. I began to wonder who really owned the public lands—people or the cows?

Often, after returning from backcountry trips, I would write letters to the federal land-management agencies complaining about the disgusting conditions I'd encountered. When these drew little response, I went a step further, reading and discussing agency planning documents with the Bureau of Land Management (BLM), the U.S. Forest Service, and the U.S. Fish and Wildlife Service to learn why there was so much overgrazing on the public lands. But I must have gone on too many range tours: Soon I had learned so much about the public lands and their problems from ranchers and federal land managers that I was working as an almost full-time volunteer conservationist, mostly on grazing reform.

Today, innumerable skirmishes later, I'm trying to figure out where the agencies, the ranchers, and the conservationists have gone wrong. After all these years of effort, we still face the same set of problems: seriously abused public lands with devastated streamside areas, ravaged fisheries and wildlife habitat, chronic soil erosion, weed invasions, sick watersheds, and degraded trails and campsites.

In the late 1970s, Sierra Club activists developed a policy that looked good on paper. It was intended, in part, to keep public lands in public ownership and to protect and improve watersheds. Our policy also endorsed the idea of "multiple use"—sharing the land among many different interests. And it supported the prevailing wisdom that the lands should be managed on a "sustained yield" basis to ensure that no more forage would be harvested than could be produced year after year. "Manage the lands under multiple-use and sustained-yield principles in an integrated program of scientific range management": Our policy sounded a lot like Range Management 101.

No comprehensive picture of livestock's impacts on the public lands existed until the Natural Resources Defense Council won a landmark lawsuit in 1974 forcing the BLM to write 144 environmental impact statements on grazing. Conservationists won another major battle in 1976 with the passage of the Federal Land Policy and Management Act, which gave the BLM the legal backing needed to protect the 174 million acres of rangelands it administered. At that moment it seemed that even the most commodity-oriented of the land-management agencies was to become a protector rather than a mere custodian of the public lands. How could overgrazing continue?

Then we found out about paper cows, powerful beasts the Bureau had to eliminate before any real live hoofed critters could be removed from the public lands. Ranchers' federal grazing permits often allowed for far more cows than they actually had. These paper cows turned out to be just about the only creatures that BLM range managers had the courage to confront. Managers at the Forest Service, meanwhile, claimed they had neither enough information nor enough rangers to make changes in the grazing status quo. Even the Fish and Wildlife Service, with its specialized mission, was locked into its commercial commitments, which included allowing livestock grazing on more than a third of the nation's wildlife refuges.

In the early 1980s Interior Secretary James Watt slammed the door on us and tried to make "conservation" a dirty word.

Rose Strickland: a leader in the fight over control of our public lands.

More on the defensive than before, we nonetheless kept working with the agencies, touring problem areas, talking with experts, and showing up for workshops and hearings. Through these efforts ranchers and conservationists alike found that their adversaries were not only human, but had valid points of view and some mutual goals. Unfortunately, the interpersonal gains far outweighed any impact we had on the land.

One of many agency-led programs we participated in was a kind of bureaucratic encounter group called Coordinated Resource Management Planning. Under the banner of CRMP the agencies rounded up small groups of wildlife and wild-horse advocates, ranchers, and conservationists to help decide how best to manage individual parcels of grazing land.

Although these meetings were billed as a chance to discuss broad management issues, such as how to protect streamside areas and improve range conditions, they often degenerated into haggling over such minutiae as deciding where fences and watering devices should go. Some of our members were even co-opted by the process, finding it more comfortable to be friendly than to demand drastic changes in grazing practices or cow numbers. Hard-won agreements would unravel when a rancher reneged or the Bureau found it had no funds to implement the recommendations it had accepted. In the end CRMP revealed itself as yet another stalling tactic by the agencies, and most of us stopped participating.

Years of immersion in this and other forms of bureaucratic cooperation were not a total loss for conservationists. Our efforts resulted in some friendships, a few fences to protect streams and rehabilitate meadows, a few new watering spots for chukar and bighorn sheep, a little extra money for elk, antelope, and bighorn reintroductions, and some fun weekends spent building fences or repairing areas damaged by grazing. But all the while we could see that we were losing ground. There were a few successes—places where individual ranchers or agency personnel had made a difference. But, unfortunately, good management was and remains the exception, not the rule.

For the most part, ranchers denied our growing complaints about mismanagement. "Nothing is wrong. We've always grazed like this," they would say. Trade groups such as the National Cattlemen's Association automatically defended livestock owners from criticism, regardless of how much damage they might have been causing. When denials

didn't work, ranchers blamed the problems on wild horses, weather, hunters, off-road vehicles, vandals, or—most recently—elk.

Only lately have a few livestock operators acknowledged that they are a part of the problem. Some have even committed themselves to working toward solutions. But even the most well-intentioned ranchers will have problems keeping their promises. No matter how much they may enjoy and appreciate public lands, for most of them making a living comes first.

Nor do our federal land managers seem likely to initiate major reforms. Risk-takers don't have long careers in federal bureaucracies. Bureaucrats get the same pay and promotion whether they do a good job or not, so why should they rock the boat? Why should they bother making controversial decisions? Those who do fight for public resources often do not receive support from their supervisors once the stockgrowers turn on the heat. There is a long list of agency professionals who have been transferred for being too tough on grazing.

Clearly, we cannot wait for ranchers or agencies to take the initiative. Too many species are close to extinction; too many acres of public land are losing their productivity too fast. Ordinary citizens will need to give the agencies a push by showing concern about these issues.

But what kinds of reform should we push the agencies toward? A movement dubbed "Cattle Free by '93" wants to prohibit *all* livestock grazing on the public lands. "It is surely an all-or-none phenomenon," says Denzel Ferguson, co-author of *Sacred Cows at the Public Trough* (Maverick Press, 1983). "As long as grazing is permitted, it will tend to be maximal, abusive, and not in the public interest." At the other extreme, some organizations argue that more staff and more money for the agencies would take care of most problems, along with more volunteers repairing public lands piece by piece.

The trouble with the first approach is that it penalizes all public-land ranchers, whether they're doing a good job or a lousy one. Prohibition would also be extremely difficult to achieve, since livestock grazing has been central to the BLM and (to some extent) the other land-management agencies throughout their existence.

The second approach is equally problematic. Without a strong commitment to the environment, the land-management agencies might well squander more staff and funds on disasters such as poisoning or chaining native vegetation, building fences that disrupt wildlife movements, and developing new water sources in once-pristine habitat.

As the Sierra Club debates what its stance should be, I'm arguing for a third approach—a method that would not unfairly penalize conscientious ranchers, but that would give both the agencies and the ranchers strong incentives to do their job well. Where lands are in unsatisfactory condition, as 60 to 70 percent of them are, livestock grazing would be prohibited. Where it is not causing ecological problems, grazing would be allowed to continue. In other words, to earn the right to graze livestock on public lands, ranchers would have to show the agencies that they are doing a good job. This obvious-sounding suggestion would profoundly change the status quo by shifting the burden of proof to ranchers. In the past, agencies have had to prove (often in court, beyond a shadow of a doubt) that a livestock operator was damaging the public lands before a single cow or sheep could be removed.

You can say that my proposal is a move toward prohibition of livestock, like Cattle Free by '93. Or you can interpret it as a conservative reaction to decades of frustration, waiting for the agencies and the ranchers to get their acts together. It is both, really—and an acknowledgment that conservationists' achievements are not keeping up with chronic abuse of the public lands.

One of the nation's land managers has recently shifted the burden of proof in the way that I'm suggesting—at least on paper. In April, Forest Service Chief Dale Robertson ordered his forest supervisors to analyze the effects of livestock on their land and to bring grazing permits into compliance with their management bibles, the local forest plans. While this may sound like nothing more than a bland reminder to do their jobs, it could prove highly controversial. Forest plans, after all, set standards designed to eliminate overgrazing and protect streamside areas, plants, soil, and wildlife.

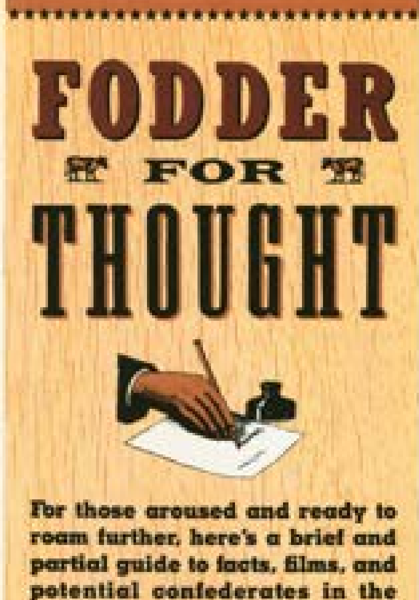
Stan Tixier, head of the Forest Service's Intermountain Region, has already ordered his staff not to issue grazing permits until the Chief's requirements are met. During the next five years more than three quarters of the region's permits come up for renewal and will presumably be scrutinized under this new policy.

The Forest Service move is the best yet made by any of our land-managing agencies toward resolving chronic grazing problems. But I've learned to remain skeptical. When political heat was turned on by stockgrowers in the past, the agencies usually backed down.

Public pressure could conceivably strengthen the resolve of the Forest Service and the other agencies, but will it be applied? Will we demand that federal agencies carry out the letter and spirit of our conservation laws? Or will we continue to let our lands be managed for the private financial gain of a few?

This is not just a dispute over cows and sheep. It's a fight over who controls the public lands. To tip the balance our way, we'll need a vast infusion of concern, interest, and action by all who care about these treasures.

Rose Strickland *is chair of the Sierra Club's national grazing subcommittee.*



The **General Accounting Office**'s recent reports on federal land management are worth reading for their frank and concise examination of our nation's grazing problems. The investigative arm of Congress has documented stream degradation and species loss as well as the inability of federal agencies to enforce their own regulations in the face of pressure from the livestock industry.

The key documents:

- *National Wildlife Refuges: Continuing Problems With Incompatible Uses Call for Bold Action* (GAO/RCED-89-196).
- *Rangeland Management: More Emphasis Needed on Declining and Overstocked Grazing Allotments* (GAO RCED-88-80).
- *California Desert: Planned Wildlife Protection and Enhancement Objectives Not Achieved* (GAO/RCED-89-171).
- *Public Rangelands: Some Riparian Areas Restored but Widespread Improvement Will Be Slow* (GAO/RCED-88-105).

You can get up to five copies of each report free from the U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20877; (202) 275-6241.

* * *

As part of its investigation of livestock grazing's effect on water quality, the **EPA** funded the 45-page report *Livestock Grazing on Western Riparian Areas*. The July 1990 document is available free from Roger Dean, Nonpoint Source Coordinator, EPA Region 8, Denver Place, Suite 500, 999 18th St., Denver, CO 80202-2405.

* * *

High Country News, a biweekly environmental newspaper that often covers rangeland issues, devoted its March 12 and May 7 issues almost entirely to livestock grazing. For a subscription, send $24 to High Country News, Box 1090, Paonia, CO 81428. Single copies are $1 plus postage and handling.

* * *

Some standard works of interest to grazing activists: ***Sacred Cows at the Public Trough*** by Denzel and Nancy Ferguson (Maverick Publications, Drawer 5007, Bend, OR 97708, 1983); ***Cadillac Desert*** by Marc Reisner (Viking, 1986); and ***Desertification of the United States*** (The President's Council on Environmental Quality, 1981). For a reasoned, journalistic analysis of grazing problems, try Jon R. Luoma's **"Discouraging Words,"** *Audubon*, September 1986. For cathartic invective, enjoy Edward Abbey's **"Even the Bad Guys Wear White Hats,"** *Harper's Magazine*, January 1986.

* * *

The **Sierra Club** works on grazing issues at the local and national levels. Local efforts are coordinated by Grazing Subcommittee Chair Rose Strickland, 619 Robinson Court, Reno, NV 89503; (702) 329-6118. Lobbyist Debbie Sease handles the political side of the issue from the Club's office at 408 C St., N.E., Washington, DC 20002; (202) 547-1141.

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The **Natural Resources Defense Council** offers advice and assistance in public review of agency land-management plans and proposed regulations and policies. The organization can also help with formal appeals of agency actions. Contact Johanna Wald, NRDC, 90 New Montgomery St., Suite 620, San Francisco, CA 94105; (415) 777-0220.

Together with the National Wildlife Federation, NRDC has published a sobering statistical analysis, *Our Ailing Public Rangelands—Still Ailing: Condition Report, 1989*. The 115-page booklet is available for $4 (including postage) from NRDC's San Francisco office.

* * *

David Alberswerth leads the **National Wildlife Federation**'s grazing lobby in Washington, D.C. The organization is also waging local rangeland battles, which are coordinated by NWF "resource centers" in Missoula, Montana; Boulder, Colorado; and Portland, Oregon. The organization's main office is at 1400 16th St., N.W., Washington, DC 20036-2266; (202) 797-6859.

* * *

The **Public Lands Action Network** (PLAN) is a new umbrella organization that hopes to keep range-reform groups and individuals in touch. Co-editors Katherine Bueler and Ron Mitchell published PLAN's first newsletter in July. For a membership, send $20 to PLAN, P.O. Box 5631, Santa Fe, NM 87502.

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Free Our Public Lands! offers free grazing fact sheets, petitions, bumper stickers, and counsel to grazing activists. Contact Lynn Jacobs, P.O. Box 5784, Tucson, AZ 85703; (602) 578-3173. Donations welcome.

* * *

The **National Audubon Society** is preparing an hour-long TV special on grazing to be aired on TBS and PBS next year. For more information on the film, *The Next Range War*, contact Chris Palmer, N.A.S. Productions, 801 Pennsylvania Ave., S.E., Washington, DC 20003; (202) 547-9009.

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As part of a larger examination of economically and environmentally sustainable development in the Southwest, economist Tom Goerold of **The Wilderness Society** has begun a case study of livestock grazing's impact on the Four Corners region. For more information, write to the Four Corners Ecoregion Project, The Wilderness Society, 777 Grant St., Suite 606, Denver, CO 80203.

* * *

The agencies in charge of federal rangeland resources are the **Bureau of Land Management** (Department of the Interior, 18th and C Sts., N.W., Room 5600, Washington, DC 20240; 202/343-5717), the **U.S. Forest Service** (Department of Agriculture, P.O. Box 96090, Washington, DC 20013; 202/447-3957), and the **Fish and Wildlife Service** (Department of the Interior, 18th and C Sts., N.W., Washington, DC 20240; 202/343-4131). State and local office addresses can be obtained through these main offices. ■

"If People Pull Down Nature..."

Last spring a friend and I went for a walk through the neighborhoods surrounding Swarthmore, Pennsylvania. We passed through a wooded area and crossed a little creek, stepping across large, flat stones. The trees in this damp countryside were still budding. As we crossed the creek, I looked north along the wavering line of water and dead leaves into the gray trees. For an instant, as still happens in that part of my mind that survives from childhood, I imagined Mohegans crouching. These fantasies jump up sometimes, and I am both embarrassed and pleased by their presence.

Tadpoles in the shallows scattered, making arrows in the water. I asked my friend if his son ever came down to these woods. "No, never," he said. "He's just not interested. He's interested in baseball and organized sports. I don't know if any of his friends come down here either."

I thought about this on the way home, wondering how much of our adult relationship with nature has something to do with our childhood fantasies. As a child, I brought cowboys and Indians and Davy Crockett and war to the woods. They were pre-packaged fantasies, and often violent, but most of them did bring human beings to nature, and served as doorways into unpackaged mysteries. Sometimes, at age eight or nine or ten, I would be in the woods alone with my BB gun, intent on shooting something (but succeeding only once), and I would end up sitting beneath a tree or next to the creek, touching my finger to my tongue and wetting my nostrils so that I might be able to smell better, listening, breathing, watching for the small critters to re-emerge, the frogs' eyes to pop up once again above the water. How many children of the 1950s and before became environmentalists or otherwise deeply concerned with the fate of nature in this way? Walking silently with my friend, I wondered how the current generation of children will relate to nature in the future: What fantasies will they bring to it; what doorways will it open for them?

by Richard Louv

I had spent the last two years traveling the country, talking with and listening to parents, children, and, upon occasion, experts. By now, anyone who reads the daily newspaper understands that the news about childhood is statistically grim. But are statistics alone enough? Like Diogenes searching for an honest man, I was looking for

Unplug the Apple, board up the mall. What's left for a modern kid to do?

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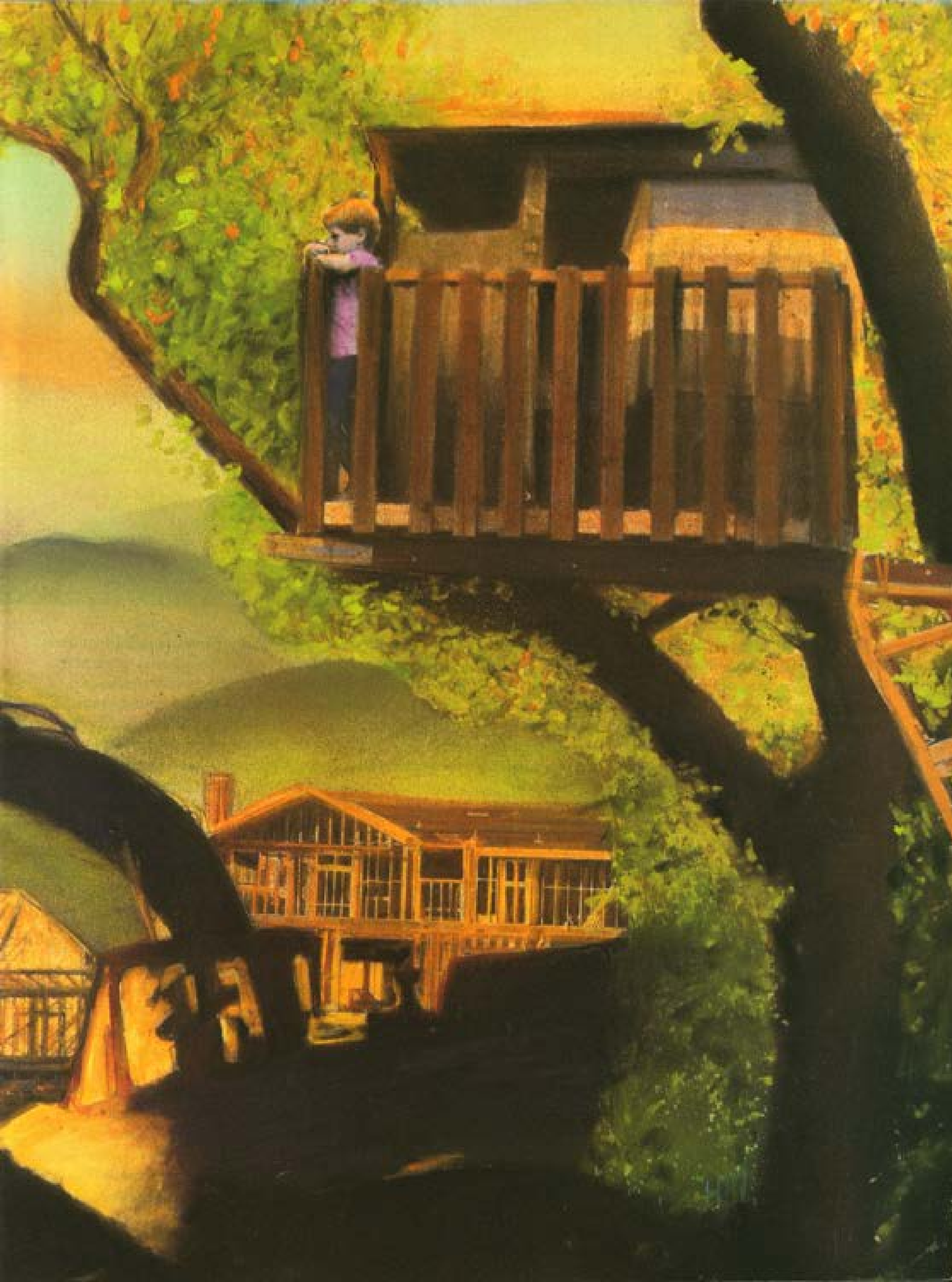
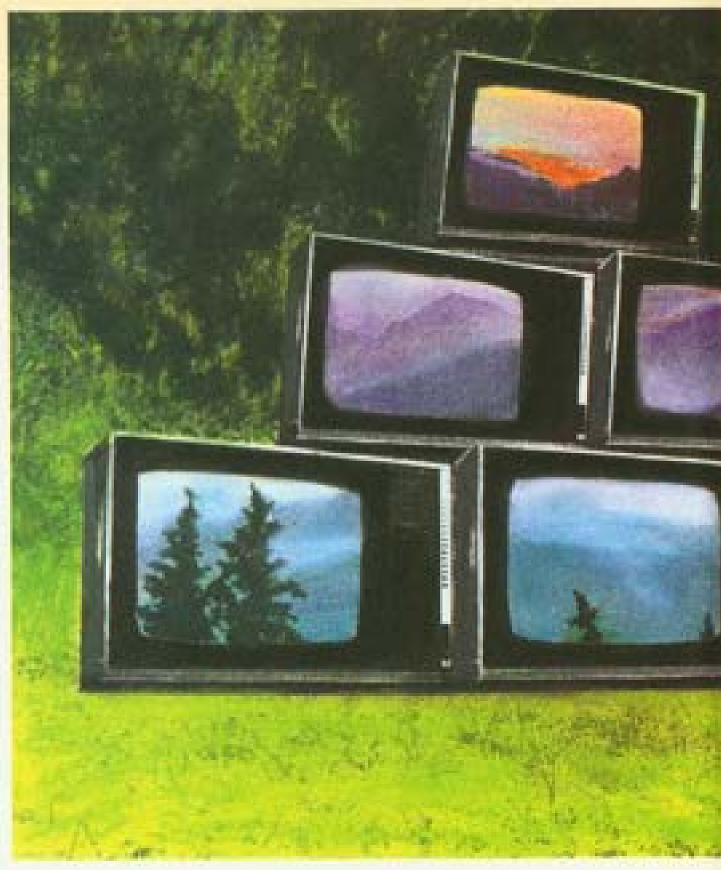


successful adaptations—for a few signs of health.

What emerged from these conversations was often stunning, sometimes terrifying, and ultimately hopeful. Parents and children described an environment that no longer makes much sense—a divorce from nature, a pollution of time, sprawling cities with no centers and few natural meeting places, residential areas that can barely be called neighborhoods—an environment that no longer nurtures children, and that drives family life deeper into itself.



The relationship between children and nature today is a puzzling one. On one hand, children's sophistication about global environmental issues is very high—and intensely felt. On the other hand, they have much less physical and unstructured contact with nature than my generation did.

In the early 1980s, an advertisement began to appear in national magazines, depicting a little boy silhouetted against a cabin window, tapping at a computer terminal. Beyond the glass, trees could be seen, and a sailboat moved lazily across a pond. In Southern California, Girl Scouts can now attend a "High-Tech Computer Whiz" camp—with $50,000 worth of terminals and software. Could it be that computers are viewed as more important to a child's life than access to nature?

With the steady erosion of farmland and woods and streams and fields adjacent to housing, the increasing programming of children's time, and the evolving fantasies and obsessions of the nation's culture, nature—for children and adults—is becoming something to wear, to watch, to consume. We sport Irresistible Sea Otter T-shirts and view "natural mood" videos (electronic images of streams flowing, to relax and distract us), while the forests are cut, the sea is despoiled, and hilltops are decapitated to make room for more malls.

Parents speak often, and sometimes defensively, of this strange divorce between children and the outdoors. At a parent meeting in San Diego a woman said, "It's all this *watching*. We've become a more sedentary society as a whole. I see ads for toys, VCRs, videos; all these machines that kids just sit there and watch. When I was a kid growing up in Detroit, we were always outdoors. The kids who were indoors were always the odd ones. We didn't have any wide-open spaces, but we were outdoors on the streets, in the vacant lots, playing baseball, hopscotch. We were out there playing even after we got older."

A man added, "Something else was different: our *parents* were outdoors. I'm not saying that they were active like yuppies today, as far as joining health clubs and things of that sort, but they were out of the house, out on the porch, talking to the neighbors. As far as physical fitness goes, this is the sorriest generation in the history of the United States. Their parents may be out jogging with their earphones on, but these kids aren't outside."

Another mother spoke of a nagging, repeating dream: "Sometimes I dream that I am one of my own children, and I think to myself, 'What am I going to do today?' I go out to the backyard to play, but I've covered every square inch of the backyard before. When the dream ends I wake up feeling dissatisfied, as if I have played in my dream, but I haven't really played. It's a feeling of never being able to get beyond the backyard." This woman and her husband are now planning to leave the constraints of San Diego. They are heading for Eagle, Colorado, where, she says, "kids can play in the fields and in the trees like kids used to, and where people actually feel safe enough to let their children out to play for hours—you know, normal, everyday behavior. Not like in my dream."

I would have suspected, before my interviews in Kansas, that children there would still be playing in the woods and along the streams. But the middle-class parents of Overland Park viewed such activities as a vanishing part of childhood.

"The only time the kids associate with nature is when it's a science project," said one mother. "They had an assignment in the seventh grade—every morning at a certain time they had to go away from the house, somewhere they could be alone with nature and write things down. And that's the only time that they really would venture off on their own to do something like that—because it was an assignment."

"No, they're not interested," another mother said. "When the kids go skiing down a beautiful mountain on a perfect, quiet day, they've got their headphones on. They can't enjoy hearing nature and being out there alone. They

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can't make their own entertainment. They have to bring something with them."

She added, "Of course, we discourage them from going in the woods alone. But we're trying as a family to encourage our kids to love nature. We take them camping, we try to get them to go on bike rides and walks. We even pitch the tent in the basement in the winter when it's too cold to pack or go outside."

One of the mothers was perplexed. "I don't really know what you mean," she said. "I think that my girls enjoy a full moon, a pretty sunset, and flowers. They enjoy the trees when they turn. That sort of thing. I don't know what else you mean."

I clarified the question: What I meant was being *engaged* with nature—free, with time to connect with it, time to bring some fantasies to nature.

"What you're talking about is something that's totally different today," said Jack, who was raised in a farming community. "Where I grew up, no matter which direction you went, you were outdoors—it was a plowed field or woods or streams. You couldn't walk a quarter mile without getting into something like that. We're not like that here. Overland Park is a metropolitan area now. The kids don't see that type of thing around here as much. They see houses being built. They see progress. What about these kids who grow up in New York? They've never even seen the woods. They haven't lost anything because they never had it in the first place. What you're talking about is the transition that *you've* made and *I've* made and most of us that grew up surrounded by nature made."

The group was quiet for a moment. I was incredulous at this description of the use of the surrounding countryside in Overland Park. Yes, much of the farmland and woods were being graded and built upon, and yet one could see the woods from the windows of the house in which we were sitting. They were still there. Something other than a lack of access was keeping their children away from nature.

A woman told this story: "When our kids were in third or fourth grade, we had a little field behind us. The kids were complaining about being bored. And I said, 'Okay, you guys are bored? I want you to go out to that field and spend two hours. Find something to do there. Just trust me, just one time try it and you might enjoy yourselves.' They begrudgingly went out to the field. And they didn't come back in two hours—they came back much later. And I asked them why. And they said, 'It was so much fun! We never dreamed we could have so much fun!' They had climbed trees, they had watched things, they had chased each other, they had played the games like we used to do when we were young. So the next day I said, 'Hey, you guys are bored, go to the field.' And they answered, 'No, we've already done that once.' They weren't willing to let themselves do it again."

Perhaps it's easy to read too much into all of this. Many children of the 1950s and earlier chose not to have any contact with the natural world—they preferred their rooms, their basements, their friends' houses, their yards, their urban museums and back alleys, but many of them grew up to discover nature as adults. And yet, one senses among parents and children that something in the equation *has* changed.

"Our kids and the neighborhood kids rush into the house, and they head straight for the video games," said one of the fathers in Overland Park. "It's almost like the house with the most kids in it is the house with the best Nintendo cartridges." Another mother added, "We can't get some of our kids' friends to come to our house because we only have kids to play with."

All these screens in children's lives can reverse the very polarity of childhood reality. One fourth-grader told me, "I like to play indoors better 'cause that's where all the electrical outlets are."

When I asked the gifted students, third- to sixth-graders, in the class at San Diego's Dewey Elementary—children who spoke at length of their relationship to computers—how many would rather be outside with nature instead of working on their computers, 12 of the 40 raised their hands. One pragmatic girl said that it all depended on the weather: "It's kind of a toss-up. But a computer will always be there as opposed to the good weather."

One boy talked of his sense of isolation outside. "Me and my sister live on this street where there are not very many

kids, there's no one really to play with if you want to go outside and play baseball or something. With the computer you can do things by yourself, and you don't need someone else to play with you."

Some experts on child's play contend that the movement from streams to screens is part of an ongoing evolution of play. Brian Sutton-Smith, professor of both education and folklore at the University of Pennsylvania, is one of the nation's leading experts on play. According to him, the Industrial Revolution slowly removed economic and social life from the home. Where children and adults once spent their days and nights together, now parents travel beyond their home to work. "Children were often left to run wild in streets or hills and to carry on the play that had been part of the earlier communal festivals," writes Sutton-Smith. "In the 20th century, this control over play has been increased still further, first by playgrounds and gymnasiums, and more recently through organized activities (swimming, dancing, sports), consumer entertainments (movies and shows) and, finally, through that most controlling of all instruments, television."

Some of this recent change in play is welcomed by many parents. As I watch my eldest son enter grade school, I remember the fistfights, the dog-piles, the mud balls packed with gravel, much of the cruelty of a Raytown, Missouri boyhood in the 1950s. Certainly physical combat is still the dominant rite of passage in some of the neighborhoods, particularly inner-city communities, where violence escalates as economic and social conditions deteriorate. Yet many parents remarked that physical combat among children has been replaced by other forms of competition, such as organized sports (and the battle of material goods: Jordache vs. Lee, Reebok vs. Keds, Apple vs. IBM).

While children do seem to be spending less time physically in natural surroundings, they also seem to worry more about the disappearance of nature—in a global sense—than my generation did. At Kenwood Elementary in Miami, most of the fourth-graders in one class said that they would rather play in their house or on the street. I asked them if they thought that kids would play in the woods or the fields in the future. One boy, who had said earlier that his ambition was to be an astronaut, offered: "Maybe, but not if the city keeps making these new ventures, making new buildings and tearing down all the wilderness."

Among other answers:

"I'm pretty worried because if all the nature goes, there's just going to be buildings and there won't be fresh air and people probably will get a lot more sick without the fresh air, all the smoke is going to go in the air and all the pollution is going to go in the water, and probably the earth will get more destroyed."

"In the future if they tear down all the woods and stuff there may be another planet where they have all wilderness

and they take the animals like in a rocket or something, they take them to that planet. Like Noah's Ark."

I shifted the subject: You kids are going to be in charge of the environment in the future. What do you think could be done?

"Tell people to take off the smokestacks of the factories so the air wouldn't be polluted, and invent a stove that would have no fire, and a boat that would fly up in the air so the water wouldn't be polluted, I would tell everybody to plant more trees and get more seeds for the vegetables for rabbits."

"If I was in charge, in one part you would have city and the other part of it would be forest, and you couldn't pollute it and if you do, you would get punished. You could live in the forest too, but you wouldn't be allowed to pollute."

"Some business people just care about their business, and they don't really know anything about nature and they just want to build and other people can't really do anything because the other people are more in charge 'cause they're higher. And the people who care about nature can't really do anything even if they wanted to."

"If people pull down nature, if they pull down all the trees to put up buildings, how are they going to make their living if they can't use the trees to build their furniture?"

These comments, it seemed to me, expressed some surprisingly sophisticated environmental concepts. As a boy, I was intimate with the fields and the woods behind my house, and protective of them. Yet, unlike these children, I

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had no sense of any ecological degradation beyond my small natural universe. Children today may be less intimately involved with nature than many of us were, but they exhibit far more global environmental awareness. Ironically, the electronic world that disrupts intimacy with nature has also been used to communicate nature's distress to these children.

One of my journey's last Midwestern stops was at Southwood Elementary in Raytown, Missouri, near Kansas City. This had been my elementary school. The same swings (or so it seemed) still creaked above the hot asphalt, the hallways still shone with the same linoleum tile, the same pint-size wooden chairs, carved and deeply initialed with black and blue and red ink, sat waiting in crooked rows.

As the teachers herded the children in from several classrooms, second through fifth grade, I unpacked my tape recorder and glanced at the ridge of blue-green elms moving slowly in the spring breeze. How often I had dreamed of those trees. . .

I turned to the children and felt suddenly that they might have been friends from my own childhood. There were fewer slogans on the T-shirts than I remembered seeing in other schools. Many of the girls in this class wore cotton print dresses. Perhaps this sense of continuity had to do with the geography of Raytown, which still exists on the edge of farmland and woods. Developers apparently lost their interest in it and moved west, on to Johnson County and Overland Park. Whatever the reason, the school and these children seemed suspended in time.

I began by telling them that I had gone to this school, that I had lived on Ralston Street, that there had been a big woods behind my house, and that the woods were all gone now, replaced by a housing tract—in which some of these children might now live.

I told them I wanted to know how kids feel about nature. I asked: How many kids here spend a lot of time in woods and fields? Almost all of them raised their hands. I was astonished. This was the opposite of the response in every other classroom that I had visited around the country.

"Let me ask you a specific question," I said. "When you go out into the woods and the fields, what are the fantasies —the images—in your mind? What do you think about, who do you pretend to be?"

The answers came quickly. Many of them were connected to science.

"I'm some famous mad scientist out looking for some frogs or something to stick in a new chemical to make the world explode or something."

"I feel like I'm a scientist and I'm looking for cures for diseases. And like I'm finding some secret passages."

"What I imagine whenever I go in the woods and go look for stuff is I'm one of the world's great explorers and I'm exploring something else. I'm trying to look for something."

"Whenever I'm out in the woods, I like to think about things like Star Trek and space and how it can go on and on forever and things like the Loch Ness monster and Bigfoot and if they really are true."

The fantasies these children took into the woods are more indirect than mine were. Rather than being associated with the cowboys, Indians, and frontiersmen of my boyhood, these fantasies were more likely to involve technology, space, and—particularly for the girls in this class—family issues.

"I just pretend I'm my grandpa. I have a little pair of overalls down at my grandfather's. I put those on and I do the exact same work as he does and it make me feel like I'm a farmer."

"Well, when I'm in the woods, I play like it's just a home. I just go back to the woods and like with all the trees gathered together, and some of the trees split, it sort of looks like a home."

One fifth-grader was wearing a plain print dress and an intensely serious expression. She later told me that she wanted to be a poet when she grew up. She said, "When I'm in the woods, I feel like I'm in my mother's shoes."

In addition to the sense of freedom and fantasy, access to nature also gives children a sense of privacy, a place separate from the adult world, *older* than the adult world:

"I feel like I just want to go get a whole bunch of wood and build my own house as big as I want it and then I'd have

all this land to myself, and I could just kind of move out of my own home, and just visit my mom, and I'd get my own job, and I'd feel more grown up."

"Whenever I'm out in the woods, it feels like that's where I should go, like it's your home, and you can do anything you want to because there's not anyone bothering you. You have the woods to yourself."

The young poet said, "For me it's completely different there. It's more peaceful and it's like you're free when you go out there, it's your own time. It's better to me than watching TV because there's nothing really you can learn from TV. But when you go back in the woods, it's like if your brain's empty, you got everything back there. Sometimes, I go there when I'm mad and then just with the peacefulness I'm better. I can walk back and be happy and my mom doesn't even know why."

I asked them how their parents felt about their being in the woods. Several of the kids said their parents didn't want them going out there because of fear of strangers.

"They don't feel real safe if I'm going real deep in that woods. I just can't go too far."

"My parents are always worrying about me. I don't know why. And like I'll just go and usually I don't tell 'em where I'm going so that makes 'em mad so usually I go without them knowing 'cause I just want to go freely. Like I'll sit behind the tree or something, or lay in the field with all the rabbits."

One boy said his father doesn't worry about him in the woods, "'cause when he was little, he used to get a whole bunch of his friends, they'd go real deep in the woods, they'd find these vines. They'd start swinging on the vines like Tarzan and stuff and he showed me how to do it and the vine busted when he was on it and he fell, and he was laughing and everything. It was pretty funny."

Finally, I asked if any of them had had a favorite woods or favorite field replaced by a housing development.

An overweight little girl with thick glasses spoke in a dreamy, story-telling voice. Perhaps she was only caught up in the moment, perhaps not. "I had a special creek and there was a goose that always came there and would drink the water," she said, "and so the goose he kept on biting at my toes, and finally I just told him that he should start biting on the leaves. So I stuck leaves in his mouth, and they finally tore it down. And the goose was killed."

How do you know?

"'Cause I watched 'em tear it up and one of the machines killed him."

"We had a field," said a boy. "They were going to tear it down, so we had this meeting, and we sat in this real tall grass where nobody could see us and we all discussed what we were going to do. We said we wouldn't let 'em. We moved our hideout to right on the edge of the field where they started to build and we started just sittin' there and sayin' to them that this was ours but they just said, 'Sorry

kids, we already planned this out to make houses here so you're going to have to find someplace else.' That made us really mad."

It touched me deeply that these children still felt the way about the woods that I had, that this part of childhood was not lost for them, and that for others, perhaps, it was only misplaced.

Listening to them, I remembered how, from third to sixth grade, I had pulled out hundreds of survey stakes—the wooden stakes with the bright orange flags attached to them. I knew what they were for. The year we moved out of that neighborhood, the woods were torn down and a new housing development went up.

I asked if any of them had ever pulled out a survey stake. More than 20 of them raised their hands. Enthusiastically. And I laughed.

I told the kids it was almost time to leave and began to ask another question, but one red-haired girl, who had not yet talked, began to wave her hand frantically.

"Behind Ralston Street!" she exclaimed. "There's still some woods back there!"

No, it was all torn down. I was sure of it.

"But some of it *is* still there, and there's a park back there."

The boy next to her joined in. "They have a creek back there, it's a big field that we like to go out and play in. The other night we went out and played war out there."

The red-haired girl traced a map in the air with her finger. "There's hedges and then Ralston's right over here and then a creek right here and then the field's right in here. There's a big house hidden away. It's *your* woods!"

After the class, I found myself driving toward Ralston. I was sure that the kids and I were talking about different places. But, still, I drove back to my old neighborhood and looked for the woods. Maybe part of being a parent is finding and reliving your own childhood, through your children, and then letting it go.

The kids were right. There was a little park. But where most of my woods had been, now there were houses. According to a hand-made sign, the little park was called Cap Garvin Park. I got out of the rental car and walked the length of it. It was just a long field, located at the extreme end of where the woods had been. A few trees remained near the end of the field.

As I passed under one tree, I remembered walking in the snow there with my father, now dead. He had his old army coat on, and was holding an air pistol. We were looking for rabbits, and I saw a trail of ungraceful tracks across the snow through the trees. Over to the left, a trickle of water ran where the creek used to be. I remembered falling down the

Continued on page 106

V I E W P

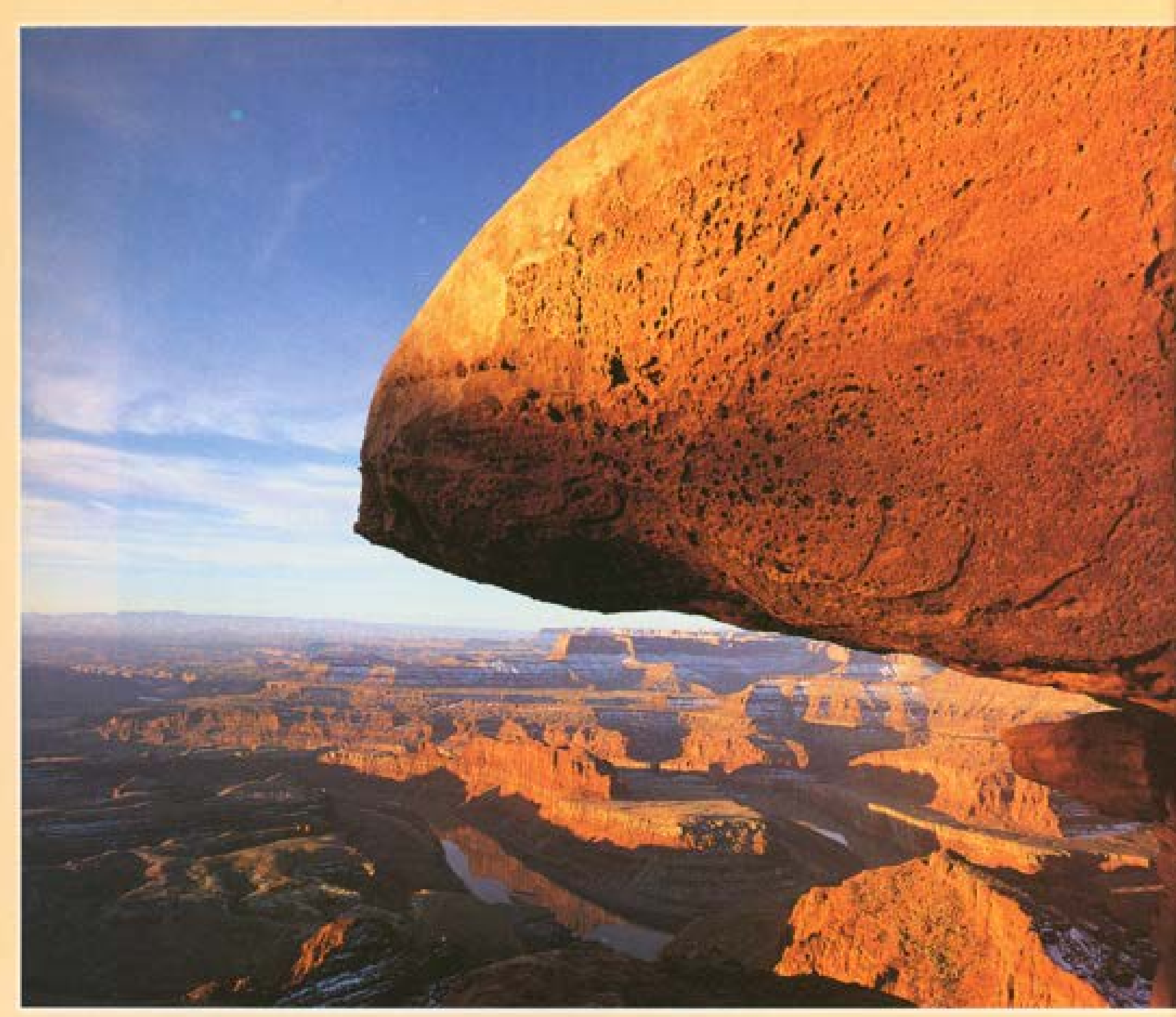
THE WINNERS OF SIERRA'S 1990 PHOTO CONTEST

By now you'd think we'd seen them all: the pinecones, the sunsets, the rippled waters. But each time we're surprised once again by the artistry of our photo-contest winners, this year chosen from a field of more than 3,000 entries. The fact that we can still *ooh* and *ahh* over a tree is a compliment to the skill and sensitivity of the photographers, and a testament to the kinetic, timeless beauty of the natural world, a most generous subject. ◆ Many thanks to our judges, Carolyn Robertson of Yolla Bolly Press, Dian-Aziza Ooka of *Parenting* magazine, and photographers Stephen Kasper and Geoffrey Hiller; to our sponsors, Nikon, Giant Bicycle, Nike, and Buck Knives; and to all the photographers who entered the contest.

O I N T S

FIRST PLACE
Horizons
[Color]
WARREN MARR
Tujunga, California
◆
Mono Lake, California
(ABOVE)

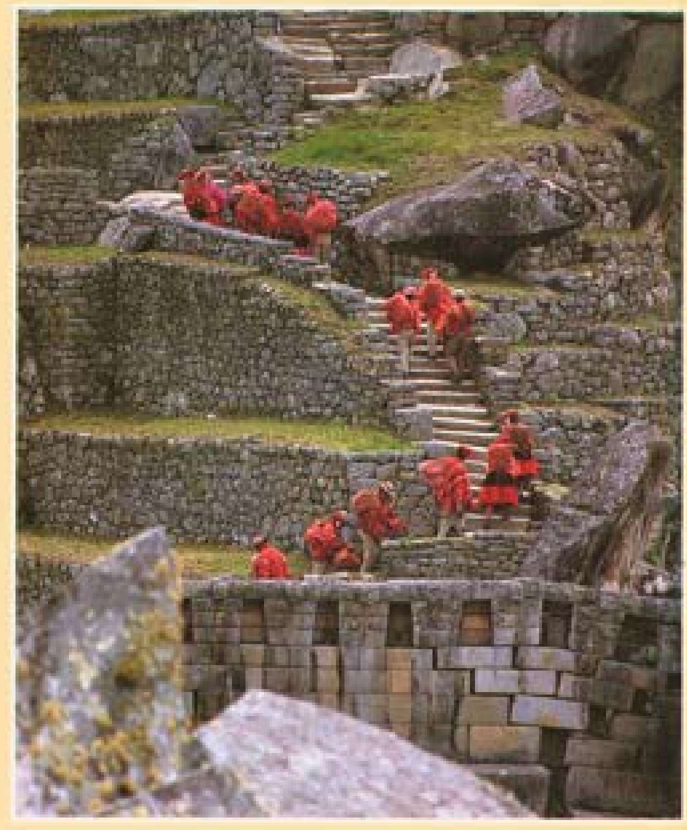
SECOND PLACE
Horizons
[Color]
DOUG HILBORN
Yellowstone National Park, Wyoming
◆
Sunrise Through Stormclouds
Canyonlands National Park, Utah
(RIGHT)



GRAND PRIZE
CHARLES CAMPBELL
Littleton, Colorado
◆
Dead Horse Point, Utah
(ABOVE)

FIRST PLACE
International
[Color]
ERIC LAWTON
Santa Monica, California
◆
Yangshuo, China
(ABOVE)

SECOND PLACE
International
[Color]
LEE BARNES
Seattle, Washington
◆
Machu Picchu, Peru
(RIGHT)



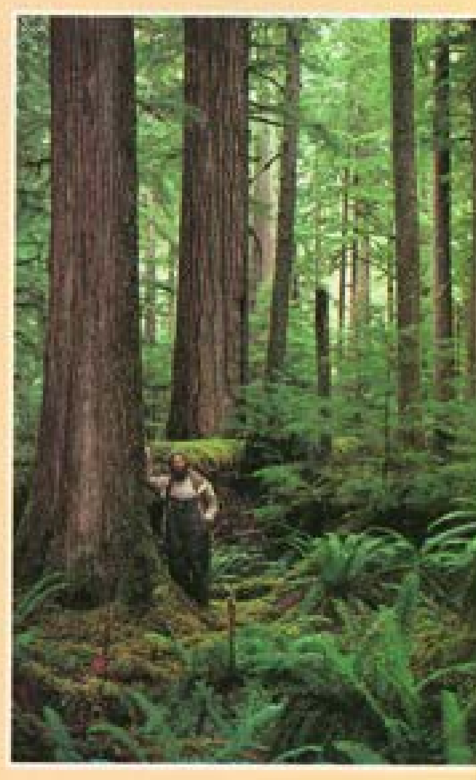
SECOND PLACE
People
[Black & White]
ROBERT BLAKE
Vancouver, British Columbia
◆
Cannon Beach, Oregon
(TOP, LEFT)

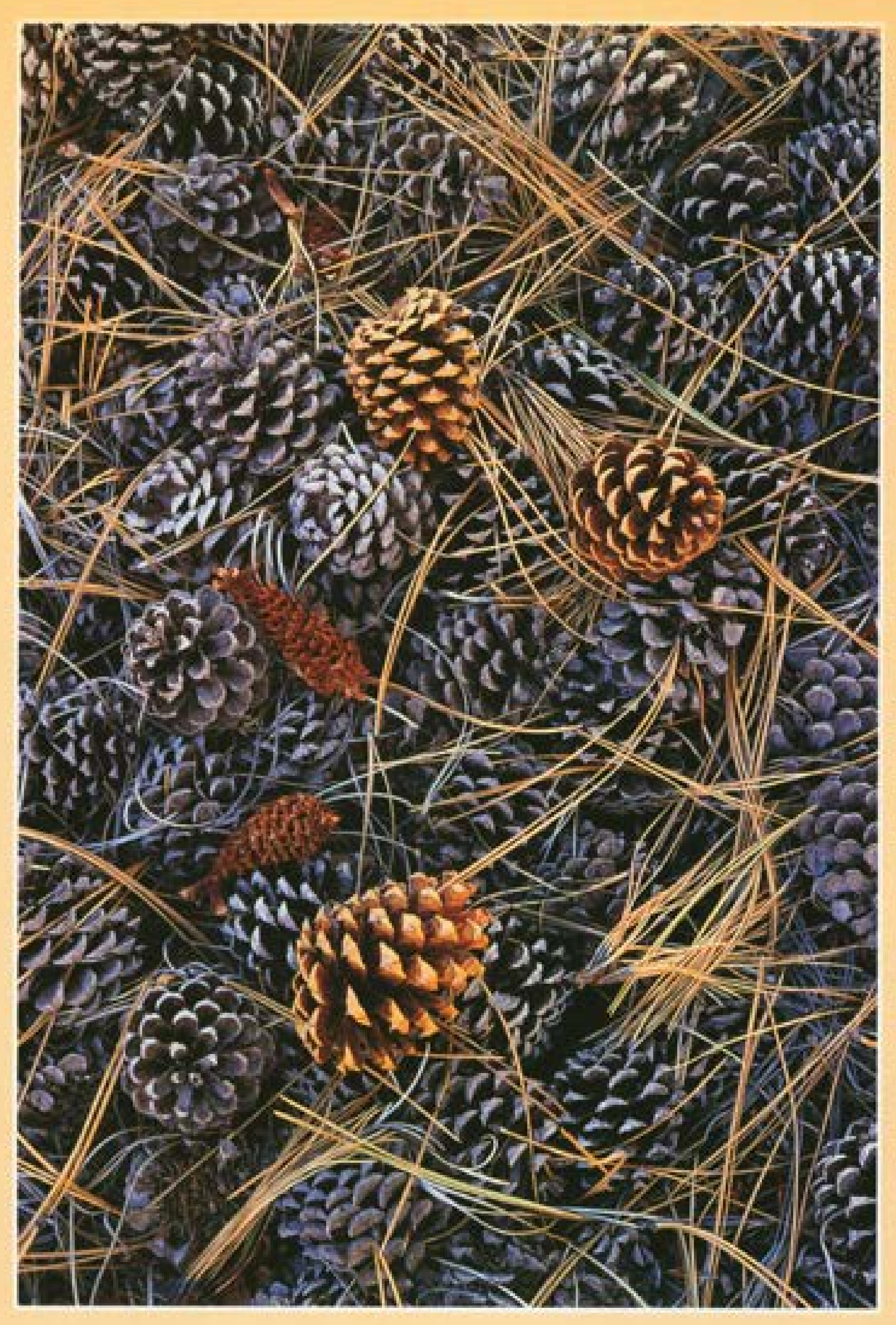
SECOND PLACE
Horizons
[Black & White]
ANN GINSBURGH HOFKIN
Long Lake, Minnesota
◆
Greenhouse-Garden
Minnesota Landscape Arboretum
Chanhassen, Minnesota
(BOTTOM, LEFT)

FIRST PLACE
People
[Black & White]
JOANNE McCUBREY
Placerville, California
◆
Fawn
Placerville, California
(ABOVE)

FIRST PLACE
People
[Color]
FRANK KACZMAREK
Oakdale, Connecticut
◆
Reflections
Devils Hopyard State Park, Connecticut
(LEFT)

SECOND PLACE
People
[Color]
PAMELA MILLER
Eugene, Oregon
◆
Doug Wechsler in Ancient Forest
Mt. Rainier National Park, Washington
(RIGHT)





FIRST PLACE
Patterns
[Color]
JIM BECIA
Livingston, Wisconsin
◆
Pine Cones
Zion National Park, Utah
(ABOVE)

FIRST PLACE
Patterns
[Black & White]
JIM BENEDICT
International Falls, Minnesota
◆
Saguaro Giant Cacti
Saguaro National Monument, Arizona
(BELOW)

FIRST PLACE
Horizons
[Black & White]
SUSAN RUMMERFIELD
Seattle, Washington
◆
White Sands National Monument, New Mexico
(TOP, RIGHT)

SECOND PLACE
Patterns
[Black & White]
NANCY MORTON PILARSKI
Chicago, Illinois
◆
After a Rain
Waveland Park, Chicago
(BOTTOM, RIGHT)

MARK PENBERTHY

CLIMBING JACOB'S LADDER IN A NEW JERSEY DUMP

THE Fox OF Piscataway

by Peter Wild

THAT I'M A FUNCTIONING ADULT WITH THE SOUL OF A MOONCALF IS the fault of my grandfather. He spent his youth yodeling from peak to peak while herding sheep across the Bohemian Alps, and the airiness of those years never left him. Sometimes he'd go up into the woods behind our hillside farm, and we would hear him atop the low mountain, his falsetto quavering out across the New England valley. Like a hatchling, I was imprinted by gentle surroundings and sweet whimsy.

That's a terrible preparation for adulthood. Yet, despite the usual share of bloodyings since, that's what I seem to be stuck with: a continuing lightness welling in my breast while I confront a world that at times seems to make no sense at all.

Still, opposites attract in ways that make their own sense. After some years of wandering, I settled in the desert. Decades later, I still find the indigo lizards doing push-ups in the impossible heat and the cactuses writhing around our house strange, but like it all well enough. I even revel in the continuing newness of it, especially the space that stretches out forever from my back door, where a landscape of pistachio-green, thorny-downed lava flows invites a trail runner like me to jog on and on.

Yet you can't shake first impressions. Lodged in my mind there's the white farmhouse backed up against our mountain, ordained in its place among pastures and leafy New England hills. Now and then I've had the notion to go back—though I hear the farmhouse is long since gone, along with the people—but I've stayed pretty much where I am, out here among the cactuses and roadrunners.

That sounds as if I spend my days in some kind of lavishly nostalgic state, watching the whim-whams of the past going around in my head. Not entirely true. I may be a dreamer in my secret life. But dreams are also a fuel, and I've spent a good part of the last ten years peering into the lives of early envi-

ronmentalists, ferreting out their foibles and virtues, trying to figure out what made them tick to such good ends. In fact, I've dedicated much of this time to pursuing one man, John C. Van Dyke, whose little volume *The Desert* was the first to celebrate arid lands as beautiful in themselves. At the beginning of the century, his book did much to turn the nation's collective mind toward thoughts of preserving the despised cactus sweeps.

If the truth be told about the supposedly objective tribe of biographers, we're in it for ourselves. The midnight oil, the weeks spent sifting through forgotten manuscripts, the earnest plungings into scholarly alleys that more often than not lead to abrupt dead ends—no one endures such labors for altruistic reasons alone. No, our widely touted "love of learning" simply is an excuse. What we're really after are those essential things we want to know about ourselves. Our subjects are our physicians, and if we can only get to know them well enough, so we believe, we'll be healed.

Whether or not this is a delusion, it's how I feel about Van Dyke. Like me, he grew up in the East but spent a good deal of time in the West, exploring what were in his day the blank spaces on the map. Like me, he lived on a farm as a boy, and, a somewhat lonely, crotchety man, devoted much of his adult life to writing about the nature he loved. And like me, he spent his latter years grinding his teeth over a nation ravished before his eyes. He particularly mourned his treasured view from the hilly Rutgers University campus where he taught; coming back from his western forays, he saw the idyllic valley put to the axe, his childhood river choked with "the drainage from town and factory" as northern New Jersey paid the usual price for booming industries.

So, imagining the bond of parallel backgrounds, when a small research grant miraculously fell into my lap one Christmas vacation I jumped at the chance to go to Rutgers and sort through the man's private papers, lying mostly unread since his death in 1932. And better yet, the chance to walk where he walked; to see, if only in my mind's eye, the green prospects from the campus that kept tugging Van Dyke back to New Brunswick, the views of steeples and elms and river that, until the closing decades of his life, lent the place the leafiness and grace we associate with an idyllic college town.

It was years since I'd been East. Friends cautioned me about the area, smack in the middle of the booming Bo-Wash Corridor, a place, they assured me, of sulfurous smokestacks and sullen swarms of people. It turned out to be pretty much that way. Most of the time I holed up in various libraries, happy enough to rummage through Van Dyke's life. But beyond the brass doors lay a world gone all wrong. Just outside the city I found the narrow meadows where Van Dyke had wandered, wondering over their bird life and flowers, now loud with a mad highway, his beloved river shining with iridescent rainbows of pollution. Taking refuge from the cold in a shabby bar, I asked the man next to me if he ever fished in the Raritan. He cast me a bilious glance and moved away with his drink.

A few days among staggering masses and tumble-down buildings and I began to feel like one "long in populous city pent," as the poet said. Taking myself too dramatically as usual, I saw myself as a figure lost in one of Edvard Munch's nightmare canvases of garish skies and wheyfaced crowds. Addicted to the outdoors, I now understood why prisoners crave just one moment to swing their arms around in the open.

One evening as I churned in my narrow scholar's cell high in a Victorian dormitory, I felt the stillness of ghosts looking on and glanced out the window. Snow was streaming through the lamplight and trees below. Desert rat that I am, I hadn't seen such a blessing in years, such a magic stairway, a Jacob's ladder.

Next morning it was still coming down, thicker than ever. I pulled on my running clothes and borrowed a jacket. If I couldn't climb those rungs, I'd stand at the bottom, gazing up as the flakes ticked through the trees all around me, watching the angels ascend and descend. I'd stand amazed, looking up into the great dome of heaven revealed. But that required a wild place.

A librarian looked at me as if I'd asked to borrow her buttonhook when I quizzed her about nearby woods. Yes, she pondered, there had been woods when she was a girl. I persisted. But wait, she'd heard there were some wild patches a few miles off, remnants of an old military reservation over in Piscataway. Why, just last week the newspaper said a motorist had struck a deer there. Catching the swing of my enthusiasm, she started drawing a map to get me across the highway and polluted river, a complex labyrinth spreading over an envelope, the chart for my soul's escape.

I hit the sidewalk, running past sliding cars, threading through forlorn streets now transformed, up broad College Avenue. A dodge at the lights as she'd warned, then I rose with the soaring span of the concrete bridge. I was speeding now, my vision crusted with flakes, right down the center of the highway. The blizzard had shut down northern New Jersey. There was hardly a soul outdoors in all God's good, great, snow-filling world.

As it turned out, the map was wrong. (To be honest, I lost it to the wind.) But by now I had the general direction in my head, and, scenting the spoor, I threaded through a complex stack of yellow-brick apartments where a few grumpy people fussed over their cars. I sped across the grounds of a huge warehouse, where

men stood, hands in pockets, watching me from the open doors of their empty loading docks. Then a sign: "St. Catherine's Retreat." A large white house set back in an acre of trees. Ah, good. Twenty years ago it probably was out in the boonies.

I was laboring uphill now, not feeling a thing, passing more condominiums on my right, a chain-link fence across the street protecting tangles of bare maples and bent-over blackberry brambles. There were some buildings back in there, and beyond them a radio tower blinking its red light high up in the snowfall. Things were getting better all the time. Drunk with oxygen, I was ascending.

Without warning, the road gave out, ending in a turnaround before the top of the hill. But I kept going, topping out and stumbling over a lumpy field. Almost without realizing it, I was running through brush, then real woods. So that's what the passage to heaven is like.

Then I stopped all at once. Before me was a strange clearing whose far end I couldn't see over row on row of small, snow-covered cones marching off at eye level into infinity. Some remnant of World War II? A hallucination? The work of a maddened artist? Over there a refrigerator lay on its side; there a soggy cardboard box spewed oily rags and brown lettuce leaves. I was in a dump.

No, I didn't fall to the ground and bite the earth as prophets of old were wont to do. I was too surprised for that. Instead, I did what I always do when facing the end of the world: I stood stunned.

The snow was falling more furiously now, whipping in ghostly sheets across the piles. A couple more paces and I'd have been lost in this labyrinth like some doomed figure in a Bergman film, swallowed forever in the detritus of the 20th century.

I took a few steps in and stopped again. Something—not trash, not the soiled paper and cardboard tubes that usually tumble restlessly across such aboveground burial sites—had scratched across my vision. A second later, I saw a red fox take a little bound from behind a pile. He sat on the snow, then paused to consider me quizzically while scratching one ear with a hind paw. Finished, he got up, seemed to nod, and was gone.

Alone again, I resisted the obvious, the tomfoolery of the poet who celebrates the leaf fallen at his feet as a gift of heaven. I fought the impulse, dismissed the possibilities. This was not some smiling creature appearing to lighten my moment of gloom. Neither was it Van Dyke, the old professor himself, going through a rough spot in his karma, suffering a worn-at-the-elbows reincarnation back in his old woodsy haunts. No, simply put, I was a damnfool runner chasing his dreams in a blizzard. And this was a fox that had managed to survive—fairly well from the looks of him—among the ruins of civilization. He was no more and no less.

But limping back I bore the sleek flame of him through the snowy world, by now my feet gone to ice in thin shoes sodden with slush. ■

Peter Wild *teaches English at the University of Arizona. A collection of his poetry,* The Brides of Christ, *will be published later this year by Mosaic Publications.*

MARK PENBERTHY

Barnstorming for Wilderness

James R. Udall

PEOPLE WHO KNOW Brant Calkin like to tell Brant Calkin stories: about his spartanly furnished apartment (where "the phone was kept in the refrigerator and even the M&Ms were stale"), about the time he lay down in front of a bulldozer to prevent it from invading a roadless area, about his penchant for junk food ("he'll eat anything a pig will"), about the 1,800 miles he has hiked in the Grand Canyon, and about how, when he was president of the Sierra Club's Board of Directors, he would fly into San Francisco for meetings carrying only a toothbrush in one side pocket and a razor in the other.

Eccentric, colorful, articulate, and savvy, Calkin has been a mainstay of the environmental movement in the Southwest for almost three decades. During that time, the man Earth First! founder Dave Foreman once called the "original burr-headed hippie" has battled for clean air, wild and scenic rivers, and public access to public lands. He has also worked to block coal mining and power plants on Utah's Kaiparowits Plateau, silver mining in wilderness areas, and dams on New Mexico's Gila River.

Since 1987 Calkin has been executive director of the Southern Utah Wilderness Alliance (SUWA), a citizen's group. His current priority is marshaling support for a bill authored by Representative Wayne Owens (D-Utah) that would designate Utah's finest canyonlands as wilderness. The rest of the state's congressional delegation is vehemently opposed to the legislation, and Calkin recognizes that it may be some years before a wilderness bill is passed. "This is destined to be a protracted struggle," he says. "But however long it takes, and whatever the eventual outcome, it's a struggle I feel is worth participating in."

"Brant truly believes that individuals can make a difference," says SUWA Chair Janet Ross. "And by never leaving the trenches, he's proved it time after time."

Calkin's commitment to the land dates back to the 1940s. Growing up in Los Alamos, New Mexico, he spent weekends exploring nearby Bandelier National Monument, a rugged, canyon-cut plateau dotted with prehistoric Indian ruins. Calkin, now 56, remembers Bandelier as "a nifty place where I saw my first black bear and spent some very formative time. Over the course of 17 years I spent a total of six months in just one favorite canyon there, never seeing anybody that I hadn't brought."

After graduating from high school, Calkin attended the University of New Mexico, served a stint in the Army, then accepted a job at Los Alamos National Laboratory, the birthplace of the atomic bomb. For the next 13 years he worked as a technician on

"Don't take yourself too seriously; recognize that your adversaries are not necessarily driven by evil; demonstrate a sense of humor; and don't try to con anybody." —Brant Calkin

GARY HOVLAND

experiments in high-temperature chemistry.

In the early 1960s Calkin received a gift membership to the Sierra Club. Before long, Executive Director David Brower had inspired him to enlist as a foot soldier in the Club's landmark campaign to block two dams that would have drowned 140 miles of the Grand Canyon. Over the next six years Calkin's volunteer conservation efforts became more and more absorbing, and in 1969 he left his well-paying job at the laboratory to work for a pittance at the Santa Fe-based Frontera del Norte Fund, an offshoot of the Sierra Club Foundation.

Although the new job involved tasks for which he had little training—lobbying the New Mexico legislature, fundraising, and public speaking—Calkin soon demonstrated an aptitude for the work. As he tooled around Santa Fe in his bumper-stickered Citroën ("Eat Lamb! 10,000 Coyotes Can't Be Wrong"), played squash with the governor, and panhandled for Frontera among the city's turquoise plutocracy, Calkin gained a reputation for integrity and ability. In fact, some politicians in that conservative state found his straight-shooting style so refreshing, they began appearing in his office seeking advice.

"It was marvelous to watch," says John McComb, at that time the Sierra Club's Southwest regional representative. "Brant is as strong a conservationist as I've ever met, but he also has an intuitive understanding of the practical realities of politics. He has the rare gift of being able to argue his case without pulling any punches, but without raising any hackles, either."

In the early 1970s environmentalists in the Southwest were far fewer than they are today. Recognizing that he was unlikely to get a fair hearing on environmental issues in the neolithic New Mexico legislature, Calkin learned how to garner favorable publicity with eco-theater, as when he brought a live mountain lion into a legislative hearing.

Calkin also developed a talent for winning the confidence of those who

did not share his views. One day a Texas oilman named Pat Dunigan showed up at the Frontera office. As Calkin recalls, "He had more money than God; he and I were as different as night and day." Dunigan had bought a 100,000-acre ranch encompassing the Valle Grande, a volcanic caldera adjacent to Bandelier. Part of the ranch had been leased to a timber company, and the oilman was distressed by the damage loggers were doing to his land. He asked Calkin for help.

Sensing a chance to influence the future of the caldera, one of New Mexico's most significant landforms, Calkin arranged an inspection visit by the Sierra Club's staff forester. Information provided by the Club inspired Dunigan to file a successful lawsuit against the logging company. Later Calkin persuaded Dunigan to deed the ranch to the government. Before the transfer could be concluded, however, Dunigan died of a heart attack. His heirs are undecided about the ranch's fate, but Calkin hopes that someday it will be publicly owned.

Calkin has also won the admiration of the Pankeys, a clan of cattlemen in southwestern New Mexico who trace their history back to the days when their forebears traded cattle with Pancho Villa. Calkin had numerous heated encounters with the Pankeys in public hearings over grazing fees and cougar hunting, but as the combatants grew more familiar, their fights served only to deepen their mutual respect and affection. Eventually this archetypal environmentalist-versus-rancher conflict resulted in an unusual collaboration: *Land and Cattle*, a book portraying the joys and hard work of ranching, which Calkin helped fund and to which he contributed a foreword. "This is a gladiator's salute," he wrote, "a recognition that flint striking against steel can produce warmth and light."

"I've known Brant for 27 years and he and I have never agreed on one subject, as least as far as public lands go," says Reuben Pankey. "But I still like him. He's spent his whole life grinding away, working at what he believes in."

During his years at Frontera, Calkin remained active in the Sierra Club. In 1976 he was elected president of the Board of Directors, a role in which he is remembered for providing wise counsel at a time when the Club was beset with financial difficulties—and for his witty, incisive memos headlined "Coprolites," a geological term for fossilized excrement.

Humor has always been a Calkin trademark. He subdivided the bird kingdom into "little brown birds, dickey birds, hawks and owls, and ducks and stuff." He recently staked mineral claims in one of SUWA's own proposed wilderness areas. "Besides poking fun at the antiquated 1872 Mining Law" he says, "the claims give us a chance to testify in favor of the highest and best use of minerals—holding up the ground in a beautiful place."

After a year as Board president, Calkin became the Sierra Club's Southwest regional representative. From 1977 to 1983, when the nation declared

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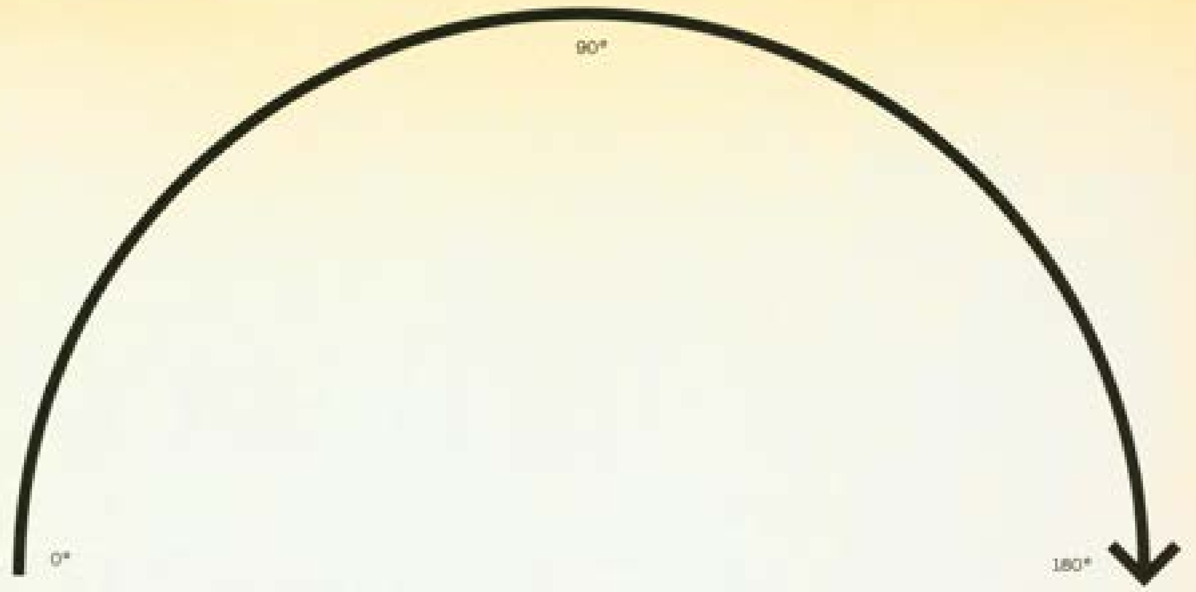

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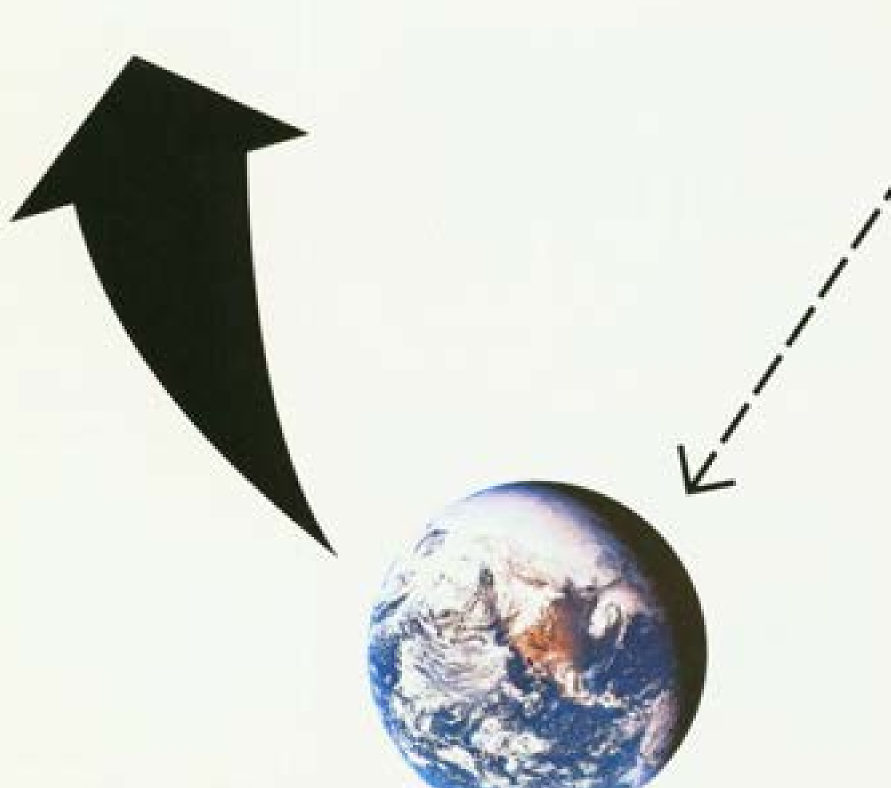

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an energy crisis and the West was besieged by mining and energy companies, he traveled hundreds of thousands of miles carrying tactical advice to citizen groups that sprang up to combat the onslaught.

Don Bachman of the High Country Citizens Alliance, an organization formed in Crested Butte, Colorado, to fight a molybdenum mine, remembers when Calkin showed up unannounced at a strategy meeting: "Here came this grizzled codger with a twinkle in his eye. At first we thought he was a miner coming to eavesdrop. But when Brant opened his mouth, nothing came out but radical wisdom.

"As amateurs involved in a grassroots organization, it's tempting to think you know what you're doing," Bachman says. "But in reality it's easy to get off on a siding for a while. Brant's sage advice helped keep us on the main line."

Conservationists were then *non gratae* in many parts of the rural Southwest, so Calkin had to hone his "lurking and skulking" skills. "With my flattop I look more like a Nazi than your stereotypical long-haired environmentalist," he says. "That enabled me to sit in a cafe in, say, Escalante [a Utah town where local wilderness advocates have been hung in effigy], gathering information through casual conversation." Calkin became so adept at this undercover work that a rancher once wished aloud that he'd "start wearing beads and sandals" so that people wouldn't tell him so much.

Calkin routinely ventured into Sagebrush Rebellion strongholds to present the Sierra Club's case. (His guidelines for addressing a hostile audience: "Don't take yourself too seriously; recognize that your adversaries are not necessarily driven by venal or evil motives; demonstrate a sense of humor; and don't try to con anybody.") He generally gained the respect of his audiences, even when criticizing their sacred cows. "I've never heard anybody say they don't like the guy—which in Utah is amazing," says SUWA's Janet Ross.

Despite his renowned amiability,

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Calkin refuses to be bullied. Betsy Barnett, a former Sierra Club board member, remembers a hearing in Kanab, Utah, at which a congressman insinuated that most conservationists were Communist sympathizers. "I've held one of the highest security clearances the Pentagon bestows," Calkin shot back. "Who are you to question my patriotism?"

In 1983 Calkin left his Sierra Club post to become assistant secretary at the New Mexico Department of Natural Resources. His appointment as secretary in the same year gladdened conservationists, who hoped that he would lead the state into a new era of enlightened resource management. A short time later, however, Calkin returned from a vacation to discover that an unqualified person had been hired as one of his deputies. He saw this as a breach of the governor's promise to let him make his own hiring decisions, and he resigned. "If you're going to run my shop from your office," he told then-Governor Toney Anaya, "you don't need me in mine."

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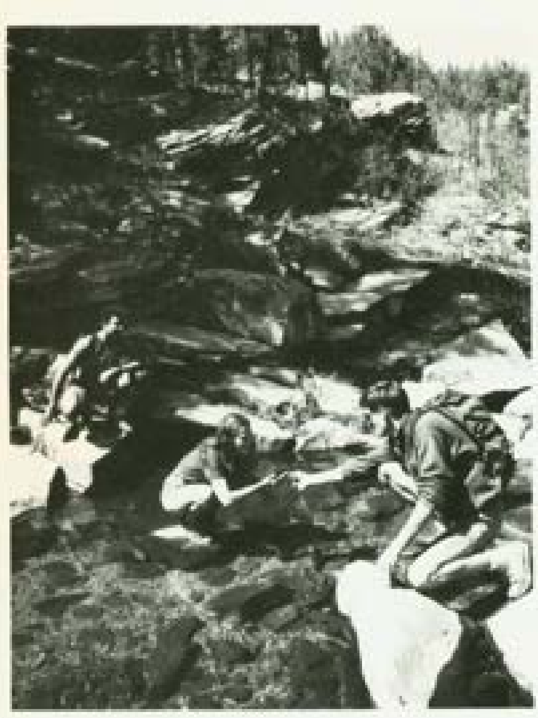

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Although Calkin admits that he's "no political virgin," he *is* a principled man who disdains the notion of "reasonable" compromise. "I'm always the guy sitting in the corner of the room, scowling whenever anybody broaches a compromise," he says. Sometimes he will quote the 17th-century French soldier and poet Cyrano de Bergerac: "Shall I make terms? No, never! . . . Let me Fight! and Fight! and Fight!"

"Brant taught me that just because you *can* cut a deal doesn't mean you should," says Rob Smith, the Club's associate Southwest regional representative. "Now, whenever I negotiate something, I find myself checking what I'm doing against what Brant might do in a similar position."

Although Calkin is regarded as an *éminence grise* by Smith and many other Southwest environmentalists, he is quick to downplay his accomplishments. He humbly attributes his 1984 John Muir Award, the Sierra Club's highest honor, to "standing on the shoulders of giants for so long." He is reluctant to discuss why he has chosen to dedicate his life to the environmental cause, other than to say that "everybody ought to have a chance to have a Bandelier."

The consensus among Calkin's friends is that whatever the source of his drive, it's not money, power, or recognition. Susan Tixier, an attorney who serves as SUWA's associate director and has been Calkin's companion for some years, says, "Brant's way of glorifying this wonderful universe is by working to protect it. He is an existentialist who recognizes that, when he dies, his body will rot and go back into the earth. If, like Brant, you view yourself as an elemental part of the natural world, protecting that world becomes instinctual."

According to SUWA staffers, Calkin is personable, generous, and compassionate, but few claim to know him well. "He is supremely self-contained, and there is a quiet reserve about him that suggests that people are not his

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priority," says one longtime acquaintance. Recalling the man seen vacuuming the rugs and emptying wastebaskets at SUWA's office after the rest of the staff has gone home for the day, Janet Ross says: "There is no pretense about Brant. From his no-nonsense haircut to the clothes he buys at Goodwill, his touchstones are simplicity and efficiency."

There have been times between jobs when Calkin has happily lived in a car. He now lives in a $5,000 house trailer in Cedar City, Utah. When Tixier and Calkin visit the SUWA office in Salt Lake City, they sleep aboard a boat moored on the Great Salt Lake. Or, when a spare weekend opens up, they may fly off in the Cessna Brant owns and pilots. Wherever they land, getting to the nearest trailhead is rarely a problem: Calkin has a fleet of old junker automobiles (five at last count) parked at airports all over the Colorado Plateau.

To save money when traveling, they sleep in the plane. "By sliding the front seats forward, we can create a flat space in the back for two sleeping bags," says Calkin. "There's a window above our heads. You can watch the rain coming down, the plane rocks as the breezes blow—it's very pleasant."

The plane also comes in handy when Calkin wants to give a visiting journalist a bird's-eye view of what's at stake in the Utah wilderness fight. Seen from above, the canyon country's tortured topography and exquisite splendor are self-evident; so, too, are the scars left from uranium mining and "chaining"—dragging an anchor chain across rangeland to remove trees and shrubs for the benefit of livestock.

Under Calkin's guidance, SUWA has tripled in the last two years, growing from 2,000 to 6,000 members. At an age when many activists have long since burned out, Calkin maintains a mindboggling schedule trying to outflank anti-wilderness members of the Utah congressional delegation. (When Senator Jake Garn recently huffed that Representative Owens' wilderness bill would pass "over my dead body," Calkin parried, "That sounds like the basis for a reasonable compromise.") To overcome the opposition of Garn and others, SUWA, along with the Sierra Club and other groups, is letting people in other states know what's at stake in Utah. Thus Calkin travels constantly, fundraising in New York, lobbying in Washington, D.C., and plotting strategy in Salt Lake City.

Unsure about how long he can maintain his frenetic pace, Calkin is now pondering low-budget retirement options. (The current front-runner: loading his folding bicycle, collapsible sea kayak, and tent into his plane and winging off to Baja California, a favorite haunt.) But for the next few years, anyway, he plans to stay at SUWA, striving, as he puts it, "to keep the land from getting any smaller." ■

JAMES R. UDALL *is a freelance writer based in Carbondale, Colorado. He wrote "The Slickrock Crusade" (*Sierra, *March/April 1988) about the campaign to preserve southern Utah's wildlands.*

Does wilderness have its privileges? American Express eyes the East Fork Valley.

Down a Slippery Slope

PAGOSA SPRINGS, COLORADO

As the Rocky Mountain snows begin to melt each spring, several hundred elk leave their wintering grounds near Pagosa Springs, Colorado, and travel along the east fork of the San Juan River. They pause a few weeks in the broad East Fork Valley to bear their young, then continue on to higher elevations.

The elk herd is the most visible sign of the wildness that remains in the South San Juan Mountains, a pristine region in southwest Colorado that is home to mule deer, black bear, beaver, and the endangered bald eagle. The East Fork Valley is also the core of what one wildlife biologist calls the last remaining area in the southern Rockies suitable for reintroduction of the grizzly bear.

But the migration routes, the elk calving ground, and the potential for a new grizzly-bear population will all be lost if Illinois developer Dan McCarthy and Balcor, a real-estate development company owned by American Express, succeed in building a year-round resort in the heart of the East Fork Valley.

McCarthy, who owns 2,780 valley acres bordered by the San Juan National Forest and the South San Juan Wilderness Area, is not planning any rustic alpine hideaway: His proposal includes 2,600 homes and condominiums, a golf course, sewage and electrical plants, and a paved road to replace the current five-mile, one-lane dirt road into the valley. He also hopes to build up to 18 ski lifts on 4,000 acres of adjoining Forest Service land.

The Forest Service granted the developers the first in a series of necessary permits a few years ago. A coalition led by the National Wildlife Federation that included the Sierra Club's Weminuche Group appealed that permit, claiming that the Forest Service's environmental impact statement was inadequate. The agency defended its decision and rejected the appeal last year. The developers are now required to conduct more thorough impact surveys for the next round of permits.

San Juan National Forest officer Bob Lilly, citing the agency's "multi-

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ple-use" mandate, deems a ski resort appropriate for the forest. The Colorado ski resorts that rent public lands for ski runs "serve the public and give a return to the government," he says.

Environmentalists and some local people have a different notion of multiple use. "We need the area for species, not for skiing," says Mike Stabler, a Sierra Club member in Boulder.

One controversial point in the debate is the grizzly-bear reintroduction. The U.S. Fish and Wildlife Service is currently revising its Grizzly Bear Recovery Plan, and opponents of the resort would like to see the San Juan Mountains, where the last known grizzly was killed ten years ago, included as one of the recovery areas. Citing possible conflicts with ranchers and recreationists, Colorado's Division of Wildlife opposes the return of the grizzly, and the Forest Service goes along with the state.

The human population could also suffer at the hands of a resort. A group of Pagosa Springs residents calling themselves Save Our San Juans says development at East Fork will double the county's population, drive up real-estate prices, and increase air and water pollution. The group is asking county officials and developer McCarthy to take account of these off-site impacts.

Environmentalists are also targeting American Express, whose funding is crucial to the development. Earth First! is organizing a Colorado-wide boycott of American Express, asking merchants to refuse the card and cardholders to snip their cards in half and return them.

All the resort opponents question the need for a new ski area in Colorado, citing a University of Colorado study finding that only half the state's ski areas made a profit in 1987–88.

"They're about to screw up the environment for the benefit of some real-estate speculators," says Tom Lustig, an attorney for the National Wildlife Federation in Boulder. "The bottom line is, you don't need the resort."

—Susan D. Borowitz

A Free or an Ugly American?

AUBURN, CALIFORNIA

NEARLY 60 YEARS after the state of California first proposed a dam on the American River near the town of Auburn, developers are asking voters in Northern California's Sacramento County to approve the Auburn Dam in this November's election. The area's river runners, hikers, and conservationists are greeting the dam proposal the way they would a 700-foot-tall Goliath—they want to topple it with one swift, final blow.

Environmentalists contend that if a full-scale version of Auburn Dam is built (one with water-storage and power-generating capacity), much of the American River would cease to be wild. Backed up for 48 miles behind the dam, the now-frothing waterway would become a placid lake, swamping some 10,000 acres of riparian habitat. According to the American River Coalition, a Sacramento-based organization that represents 23 environmental and outdoor-recreation groups (including the Sierra Club), nearly half of the area now used for fishing, whitewater rafting, and gold panning would be lost in the process.

Proponents of Auburn Dam view the project as essential to an expanding Northern California economy. "We're among the fastest-growing counties in the state," says El Dorado County Supervisor Bob Dorr, spokesman for the American River Authority, an organization of county governments and water authorities backing the dam. While El Dorado and Placer counties have adequate water supplies at the present, he says, they'll need more as their populations increase. And neighboring Sacramento County needs the water now, he adds.

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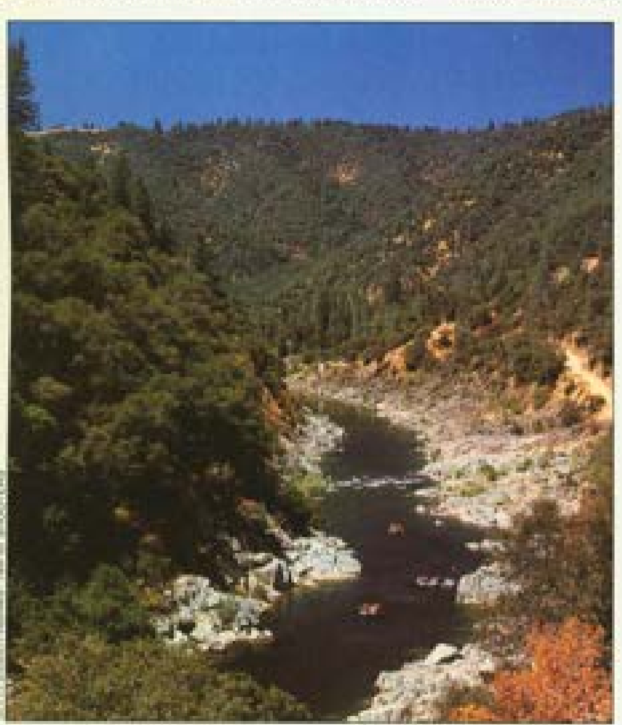
But even if the voters don't approve a dam, Congress might—to protect Sacramento against flooding. The American River has always been capricious, periodically overflowing its banks and flooding Sacramento Valley. In 1949, fed up with the river's unbridled ways, area residents decided to build Folsom Dam, downstream from Auburn. But as soon as that structure was completed in 1955, a heavy storm nearly overflowed its reservoir. The Bureau of Reclamation then called for a yet bigger dam at the confluence of the American River's north and middle forks. Auburn Dam, said its promoters, would be the world's largest thin-arch concrete dam.



Rafters are a threatened species on California's American River; this stretch would be flooded by the Auburn Dam.

Then, in 1975, ten years after Congress first authorized Auburn Dam's construction, a 5.7-magnitude earthquake struck Oroville, some 50 miles northwest of Auburn. Work on the dam was halted for earthquake assessment. Geologists disagreed vehemently over the structure's ability to withstand a moderate tremor, but the Interior Department eventually declared an earthquake-proof dam feasible. In the meantime, however, federal funding for the project had dried up.

Now the Army Corps of Engineers and most local and state officials are seeking congressional action to assure against a 200-year flood (one of a magnitude expected only once in two centuries), which would require some sort of dam at the Auburn site. "But the Army Corps can't tell us what other city in the nation has such a high level of flood protection," says Charles Casey of the American River Coalition. Casey notes that Folsom Dam already protects against a 100-year flood, and greater safeguards can be made through levee improvements and modifications at Folsom.

In the latest effort to get Auburn Dam built, some promoters have suggested a more modest structure in place of a full-scale hydroelectric dam. A "dry dam" could be built that would hold back floodwaters when necessary, but would not serve as a reservoir. This dam could also be expanded for water storage and electric-power generation if needed.

But the best alternative, says the American River Coalition, is no dam at all. The organization is calling on Congress to designate a portion of the American River a national recreation area, an idea that dam-promoters are working feverishly to prevent. Conservationists and developers alike have showered the Bureau of Land Management's state director in Sacramento, Ed Hastey, with letters presenting their views on the issue. Hastey's opinion is expected to weigh heavily when Congress makes its decision next year. The outcome will be either a wild, free-flowing river, or a lake that only power-boaters could love. *—Mark Mardon*

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A bicycle ride commemorating Yosemite National Park's centennial will take place in Yosemite Valley on September 21 as a special event sponsored by the Sierra Club and the National Park Service. On that Friday, 120 bicyclists—30 starting at each of the four main park entrances—will converge on the valley's visitor center plaza. There a public ceremony will call attention to transportation problems within the park. Money that the cyclists have raised through pledges from friends will be presented to Yosemite National Park Superintendent Mike Finley for expansion of the valley's bicycle paths.

Population Report, a publication of the Sierra Club's population committee, offers detailed information about grassroots efforts to stabilize world population. Sierra Club members who wish to receive the newsletter free of charge should write to Nancy Wallace, Director, Sierra Club International Population Program, 408 C Street, N.E., Washington, DC 20002.

Sierra Club Books has collected the thoughts and experiences of several generations of committed environmental and social-justice advocates in *Call to Action* ($12.95, paper). Included in the volume are essays by such notables as anti-nuclear activist Helen Caldicott, energy-efficiency advocate Amory Lovins, Earth First! co-founder Mike Roselle, and food-policy analyst Frances Moore Lappé.

Deep ecology, the politics of resistance, and the role of artists as healers are among the topics examined in *Reweaving the World: The Emergence of Ecofeminism* ($25, cloth; $14.95, paper). Contributors include Susan Griffin, Carolyn Merchant, Starhawk, and Paula Gunn Allen.

For sky-gazers who seek step-by-step instruction on how to locate major stars, planets, and constellations with the naked eye, or who want to learn to use the stars and the sun as directional guides, astronomer W.S. Kals has prepared *Stars and Planets: The Sierra Club Guide to Sky Watching and Direction Finding* ($14.95, paper).

Fellow bards, essayists, friends, and co-workers honor the 60th birthday of one of America's most renowned poets in *Gary Snyder: Dimensions of a Life* ($25, cloth; $14.95, paper). In original selections edited by Jon Halper, Snyder's contemporaries examine the writer's college and Beat-community days, his Asian travels, his involvement with Zen Buddhism and bioregionalism, and his emergence as a cultural spokesperson.

Hidden Dangers: The Environmental Consequences of Preparing for War, edited by Stanford University biologist Anne Ehrlich and University of Colorado chemist John Birks ($18.95, paper), attempts to cut through the secrecy that surrounds "national defense." The contributors examine abuses and cover-ups in the weapons-production industry, revealing the enormous environmental risks involved in that enterprise.

Acclaimed photographer Art Wolfe and naturalist Douglas Chadwick ventured across Canada, the United States, and northern Mexico to prepare *The Kingdom: Wildlife in North America* ($45, cloth). The book offers images and descriptions of animals in diverse locales, including the continent's deserts, prairies, seacoasts, mountains, and subtropical forests.

Many people around the world view mountains as cosmic centers, divine sources of water and life, and the abodes of gods, demons, or the dead. In *Sacred Mountains of the World* ($50, cloth), mountaineer and comparative-religion scholar Edwin Bernbaum shows the ways in which humanity has approached mountains in myth, religion, literature, and art. The book is illustrated with more than 120 color photographs.

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The above books may be ordered from the Sierra Club Store, Dept. T-150, 730 Polk St., San Francisco, CA 94109. Include $3 per order for shipping and handling; California residents should also enclose applicable sales tax. Sierra Club members may subtract a 10-percent discount from prices listed. Please allow four weeks for delivery.

Race to Save the Planet, a ten-part television documentary series based on the Worldwatch Institute's annual *State of the World* reports, will premiere October 4 on the Public Broadcasting System. Hosted by Meryl Streep and narrated by Roy Scheider, the series provides a global perspective on how our actions affect our habitat. The first installment, "The Environmental Revolution," examines the way human behavior changed thousands of years ago, setting in motion a chain of events leading to today's ecological crisis.

Viewers participating in a *Race to Save the Planet* television course, sponsored by the Annenberg/CPB Project, can earn college credit. For more information about this environmental class, call 1-800-LEARNER.

Thinking of hiking the Inca Trail to Machu Picchu? John and Gina Hamilton, intrepid members of the South American Explorers Club (SAEC), have prepared a useful map of Peru's most famous historical route. The 1:25,000-scale topographical map is replete with explanatory notes, a cross-sectional view of the trail, a chart of distances, and an annotated diagram of the ancient Inca city. Copies of the map are $4 each ($3 for SAEC members) plus $1.50 shipping and handling from the South American Explorers Club, 1510 York St., Denver, CO 80206. ■

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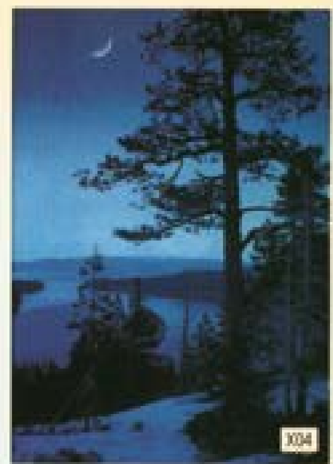

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OUTINGS
Sierra Club

1990–91 Foreign Outings

Sea of Cortez, Baja California, Mexico

From the Windward Islands of the East Caribbean to Turkey's captivating Aegean and Lycian coasts, our experienced volunteer leaders have selected a variety of vibrant settings for you to enjoy on Sierra Club Foreign Outings this year or next. Accompanied by fellow Club members who share your outdoor interests, you may marvel at Zimbabwe's Victoria Falls, explore New Zealand's Milford Sound, or hike to remote Zanskar and Ladakh in the Himalaya.

For more information on these trips, send in the coupon on page 90. Please refer to the 1990 Outings Catalog (January/February *Sierra*) for our reservation and cancellation policy. Some trips are tier-priced. For an explanation of tier-pricing, see the box on page 89. Prices are subject to change and do not include airfare. Leader approval is required for all foreign outings.

AFRICA

Africa's Great Wildlife Preserves: A Leisurely Holiday Safari, Tanzania—December 17–31, 1990. Often in sight of Mt. Kilimanjaro, our safari takes us to six wildlife preserves, including Serengeti, home to more than 3 million large animals. We'll travel to Ngorongoro Crater and Olduvai Gorge, meeting the Maasai in their villages. Expect to see elephants, giraffes, wildebeests, and countless birds. We'll travel by jeep and stay in tents or lodges. *Leader: Dwight Taylor. Price: $3,400; Dep: $200.* **[91780]**

Kenya Game Parks and Preserves: Aardvarks to Zebras—June 24–July 6, 1991. Kenya's extraordinary wildlife is the focus of our African safari. Accompanied by a naturalist, we'll visit a variety of habitats, including Amboseli, Lake Nakuru, Maasai Mara, and more. Guest speakers will treat us to talks on Kenya's history, and we'll visit with the Maasai to learn about their culture. No strenuous hiking is planned. We'll stay in permanent camps or lodges. *Leader: Gary Dillon. Price: $2,995 (12–15) / $3,250 (11 or fewer); Dep: $200.* **[91827]**

Victoria Falls and the Parks of Zimbabwe and Botswana—August 3–17, 1991. We'll marvel at spectacular Victoria Falls and travel to wilderness areas few people have visited. Hwange and Chobe national parks boast some of Africa's largest elephant herds; at Lake Kariba we'll see numerous species saved by "Operation Noah." Activities include game-viewing from blinds, riding in Land Rovers, and optional walks. Flying between our comfortable camps will eliminate long drives. *Leader: Mary O'Connor. Price: $3,685 (10–12) / $3,920 (9 or fewer); Dep: $200.* **[91850]**

ASIA

Gorkha Holiday Trek, Nepal—December 17–31, 1990. Extraordinary scenery and many new Nepali friends await you on this 12-day, culturally oriented trek to a seldom-visited part of Nepal. Expect views of Annapurna, Lamjung, Ganesh, the Langtang peaks, and Manaslu (26,760 feet), as well as visits to Gurung, Tamang, and Brahmin-Chhetri villages. Our highest camp is at 11,000 feet. *Leader: Peter Owens. Price: $1,190; Dep: $200.* **[91775]**

Southeast Asian Adventure: Thailand, Malaysia, and Singapore—January 12–26, 1991. Enjoy the dazzling temples and palaces of Bangkok before heading south to swim, snorkel, and explore the remote islands and rarely visited beaches of Phuket and Krabi on the An-

daman Sea. From there, we travel to Kuala Lumpur in Malaysia and experience that land of beauty before taking the train to Singapore to top off our adventure. *Leader: Carolyn Castleman. Price: $1,935; Dep: $200* **[91790]**

Himalayan Traverse—Zanskar and Ladakh, India—July 8–August 8, 1991. High in the Indian Himalaya on the Tibetan Plateau lie Zanskar and Ladakh —intriguing, remote, and mysterious. Crossing seven major passes in 24 days of trekking, our route will take us from the verdant Kulu Valley into Zanskar and Ladakh's arid high desert country and fascinating Buddhist culture. Our route is never less than 10,000 feet in elevation and reaches 16,700 feet. Gear will be carried by horses. *Leaders: Peter Owens and David Horsley. Price: $2,415 (13–16) / $2,630 (12 or fewer); Dep: $200.* **[91840]**

EUROPE

Sleeping Beauty Awakes: A Glimpse of Czechoslovakia—July 8–20, 1991. This 13-day trip to a land of castles, mountains, meadows and forests combines the exploration of ancient cities and folk culture with dayhikes on rugged, wildflower-lined trails in Tatras National Park. Informal visits with concerned citizens will give us insights into local environmental problems. Lodging will be in comfortable city and resort hotels throughout the country, reached by minibus. *Leader: Diana Bunting. Price: $2,920 (12-15) / $3,175 (11 or fewer); Dep: $200.* **[91835]**

LATIN AMERICA

Holidays in Belize: Reef and Ruins, Central America—December 23, 1990–January 1, 1991. We'll stay at a rustic ranch amidst lush vegetation and exotic wildlife in the interior of Belize, with a daytrip to the magnificent Mayan ruins of Tikal in neighboring Guatemala. Our next stop will be a palm-studded Caribbean island with rooms on the beach, where we can snorkel in crystal-clear waters off the barrier reef and feast on fresh seafood. *Leader: Mary O'Connor. Price: $1,430; Dep: $200.* **[91786]**

Holiday Kayaking in the Sea of Cortez, Baja California, Mexico—December 24–30, 1990. Explore the sandy coves and hidden canyons of Espiritu Santo and Partida islands in the Gulf of California. We'll spend our days swimming, fishing, and hiking. A highlight will be a visit to Los Islotes, a sea lion rookery. Inexperienced to expert paddlers are welcome. Airline schedules require arriving in La Paz a day before the trip and leaving a day after. *Leader: Sallee Lotz. Price: $1,095; Dep: $200.* **[91787]**

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

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

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

The Magical Galápagos Islands, Ecuador—July 12–25, 1991. This "showcase of evolution" offers the drama of volcanic landscapes and a rare display of fearless wildlife, including iguanas, tortoises, sea lions, and scores of colorful birds. Photographic opportunities are exceptional, and snorkeling is excellent. Motor yachts will be our home as we island-hop throughout the archipelago. On the mainland we'll tour Quito and view Cotopaxi, one of the world's highest active volcanoes. *Leader: Karen Short. Price: $2,675 (7–9) / $3,025 (6 or fewer); Dep: $200.* **[91845]**

TIER-PRICING

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

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

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

MEDITERRANEAN

Turkish Delight: A Cultural Feast—August 30–September 12, 1991. A traveler's gem on the brink of discovery, Turkey is one of civilization's birthplaces and the gateway to Asia. We'll explore its captivating Aegean and Lycian coasts, including Ephesus, before heading inland to the breathtaking landscape of Cappadocia and the mountains and picturesque towns of western Anatolia. On this cultural tour we'll visit historic sites, churches and bazaars—as well as hike park and mountain trails. *Leader: Ruth Dyche. Price: $2,680 (10–13) / $2,995 (9 or fewer); Dep: $200.* **[91860]**

SOVIET UNION

The Greening of the Soviet Union—August 9–24, 1991. Accompanied by Soviet environmentalists, we'll walk through nature preserves in the Caucasus and Byelorussia. Highlights include two full days on Mt. Elbrus (18,510 feet), a helicopter excursion, hikes in Sochi National Park, and a tour of a proposed park near Minsk. We'll round out our adventure with sightseeing in Moscow's Red Square and Kremlin and in Leningrad's Hermitage. Join us on this wondrous trip through the Soviet Union! *Leader: Sy Gelman. Price: $2,840 (12–15) / $3,095 (11 or fewer); Dep: $200.* **[91855]**

1990–91 Foreign Open-Trip List

In addition to the trips described above, space is still available on the outings listed below. If you act promptly, you can probably find a spot on one of them. Use the coupon to send for a trip brochure.

Trip Number		Dates	Trip Fee (including deposit)	Deposit Per Person	Leader
91765	Langtang Trek, Nepal	Nov. 5–24, 1990	1630	200	Bette Goodrich
91770	Annapurna Sanctuary, Nepal	Nov. 24–Dec. 13, 1990	1610	200	Pete Nelson
91785	Face to Face, Hand in Hand, Nepal	Dec. 17, 1990–Jan. 7, 1991	1890	200	Dolph Amster
91791	Winter in Austria: Cross-Country Skiing	Jan. 18–Feb. 2, 1991	2245/2500*	200	Carol Dienger
91792	Sea-Kayaking, Costa Rica	Jan. 18–26, 1991	1595/1715*	200	Paul Barth
91793	Guatemala: Land of Eternal Spring	Feb. 3–17, 1991	1585/1755*	200	Wilbur Mills
91798	Whale-Watching, Magdalena Bay, Mexico	Feb. 17–23, 1991	1095/1215*	200	Gary Dillon
91800	Bushwalking in Australia	Mar. 3–24, 1991	2410/2665*	200	Vicky Hoover
91805	Springtime in the Annapurna Sanctuary, Nepal	Mar. 16–Apr. 5, 1991	1565/1720*	200	Peter Owens
91810	Dhaulagiri Himal, Nepal	Apr. 13–May 9, 1991	2365/2590*	200	John DeCock
91815	Hiking and Island-Hopping in Greece	May 11–26, 1991	2630/2865*	200	C. Castleman
91820	Feel the Winds of Soviet Change	May 12–28, 1991	2980/3235*	200	Bud Bollock
91825	Trans-Soviet Adventure	June 17–July 5, 1991	3450/3705*	200	Dolph Amster
91830	Amazon Villages & Machu Picchu, Peru	June 29–July 11, 1991	2810/3065*	200	Sallee Lotz

***tier-priced. See box p. 89.**

For More Details on Outings

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

Send brochures (order by trip number):

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BOOKS

Requiem for a Lost Place

A Story That Stands Like a Dam
by Russell Martin
Henry Holt
$24.95, cloth

Peter Wild

EARLY IN THE MORNING, housewives in Page, Arizona would throw on sheets as if they were prayer shawls, leave their shabby trailers, and skip on over to Wahweap Canyon. At dusk they'd be back, swooning about their adventures to grimy, dog-tired husbands who'd labored in "the hole" all day.

The women were elated because their jobs as extras in the filming of *The Greatest Story Ever Told*—starring, among others, sparkling-eyed Charlton Heston—gave them a near-miraculous break from routine in Page, a dreary government construction camp at the end of the earth.

Moviemaker George Stevens, however, was tearing his hair. By the time Heston (as John the Baptist) stepped into an eddy of the icy Colorado River to baptize Max Von Sydow, the water was rising so fast behind newly constructed Glen Canyon Dam that it threatened the whole production. But by April, work crews were burning Bethlehem and the River Jordan had turned into the Sea of Galilee. The movie was in the can.

That's but one of the small pieces that Russell Martin assembles in the story of Glen Canyon Dam—possibly the last and most fiercely contested of the huge dams constructed by the Bureau of Reclamation in its heyday.

Actually, the story begins hundreds of years earlier, when the ancient inhabitants of the canyon built a sandstone structure across a nearby creek to trap water for their crops. Undaunted by the sweep of the centuries, that's where Martin begins. The result is a near-encyclopedic tale. It progresses through early Spanish exploration of the area, takes in a fantastic scheme for a railroad through the bowels of the earth, and leaps ahead to the erection of Boulder Dam. Back in Glen Canyon again, the book crams in David Brower, Stewart Udall, the Bureau of Reclamation's Floyd Dominy, and a host of other engineers, conservationists, and politicians. It ends with the pharaonic triumph of concrete and steel in place, while lovers of nature's intricacies despair over the delicate labyrinths drowned forever beneath Lake Powell's muddy waters.

Martin's approach to all this grandeur may or may not suit readers' tastes, depending on their preferred pace. Some people like to dawdle when they hike, poking at flowers and bits of rock, perhaps even backtracking down the trail to snap a belated picture. Others get up before the crack, take the bit in their teeth and march onward, demon-driven, until they can relax atop their peak. The gentler types are most likely to enjoy *A Story That Stands Like a Dam*, for Martin is so roundabout in his presentation, savoring each detail along the way, that he may drive impatient people raving mad. Perhaps worse, he takes us off on so many side excursions that we're apt to lose sight of where we are and where we're going.

Martin's sympathies clearly lie with the preservationists. Yet I found myself so fascinated by the design of the infamous dam, by the ponderings of engineers over whether to plug the canyon with a gravity-type or an arch-type structure, I forgot that the book is a requiem for a place lost. Similarly, the gargantuan task of pouring 10,217 cubic yards of concrete every day—concrete of precisely the right temperature and mix—had me, for a moment, as gaga-eyed by technology as those folks must be who today whiz around the surface of Lake

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Powell in their speedboats, giving thanks to the Bureau of Reclamation.

Not that Martin neglects the central issue: how we lost Glen Canyon as part of our natural heritage. Piece by piece he assembles that story too—how in the 1950s environmental groups banded together to fight a proposed dam in Dinosaur National Monument, and how the preservationists, the Sierra Club foremost among them, became so focused on victory there that they agreed to a dam in a little-known but supremely precious place elsewhere. By the time wilderness-lovers realized how great the loss of Glen Canyon would be, it was too late to rally the troops in that direction. The demise of Glen Canyon, argues Martin, was not so much a question of poor intentions but, as with so many conservation struggles, of too few resources to go around. The beleaguered conservationists lacked the means to fight all the dams that the government was proposing.

This part of Glen Canyon's tale, the most important one, is told incrementally, but the story is so diluted by intervening events that Martin risks sacrificing its soul-wrenching power. The side trips themselves, however, hold their own fascinations.

PETER WILD *is a writer, poet, and professor living in Tucson, Arizona.*

BRIEFLY NOTED

"The fate of the ancient forests has become the premier issue of public-land management in the western United States," writes Keith Ervin in ***Fragile Majesty: The Battle for North America's Last Great Forest*** (The Mountaineers; $22, cloth; $14.95, paper). Ervin explores a conflict that pits forestry workers against conservationists, with the Forest Service negotiating a delicate course between them. . . . Three recently published books go far toward explaining the process of global warming while examining possible solutions to the problem. All three echo previous warnings of environmental catastrophe that U.S. policymakers continue to ignore. ***The***

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Greenhouse Trap, published by the World Resources Institute ($21.95, cloth; $9.95, paper), and the National Academy of Science's ***One Earth, One Future: Our Changing Global Environment*** (National Academy Press; $14.95, cloth) lend the imprimatur of respected institutions to their authors' findings. And ***Dead Heat: The Race Against the Greenhouse Effect*** (Basic Books; $19.95, cloth) combines the analytical expertise of Michael Oppenheimer, a senior scientist with the Environmental Defense Fund, with the concise writing style of Robert H. Boyle, a senior writer with *Sports Illustrated*. . . . In the Himalaya of northern India, a non-violent, activist crusade aimed at saving trees from the ax has recently gained great momentum. The story is told by Thomas Weber in ***Hugging the Trees: The Story of the Chipko Movement*** (Penguin; $7.95, paper). . . . "Whatever other convictions Canadians have held about wilderness over the past century," writes Yorke Edwards, one of 21 contributors to ***Endangered Spaces: The Future for Canada's Wilderness*** (Key Porter Books; $39.95, cloth), "the face of Canada today proclaims that in the main we have regarded it as something to be destroyed." This book provides an in-depth look at Canada's most pressing public-lands issues. . . . While struggling to achieve progressive environmental goals in a conservative state, many North Carolina activists have had to cut across racial barriers and contend with class and cultural divisions among whites. Their efforts are recounted in ***Environmental Politics: Lessons from the Grassroots*** (Institute for Southern Studies, P.O. Box 531, Durham, NC 27702; $7, paper). . . . For people working to end the threat of chemical poisoning, the Boston-based National Toxics Campaign offers ***Fighting Toxics: A Manual for Protecting Your Family, Community, and Workplace*** (Island Press; $31.95, cloth; $17.95, paper). . . . In ***Deadly Deceit: Low-Level Radiation, High-Level Cover-Up*** (Four Walls Eight Windows; $19.95, cloth), statistician Jay M. Gould and environmen-

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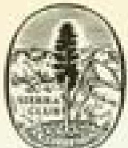

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—*Judge Learned Hand*

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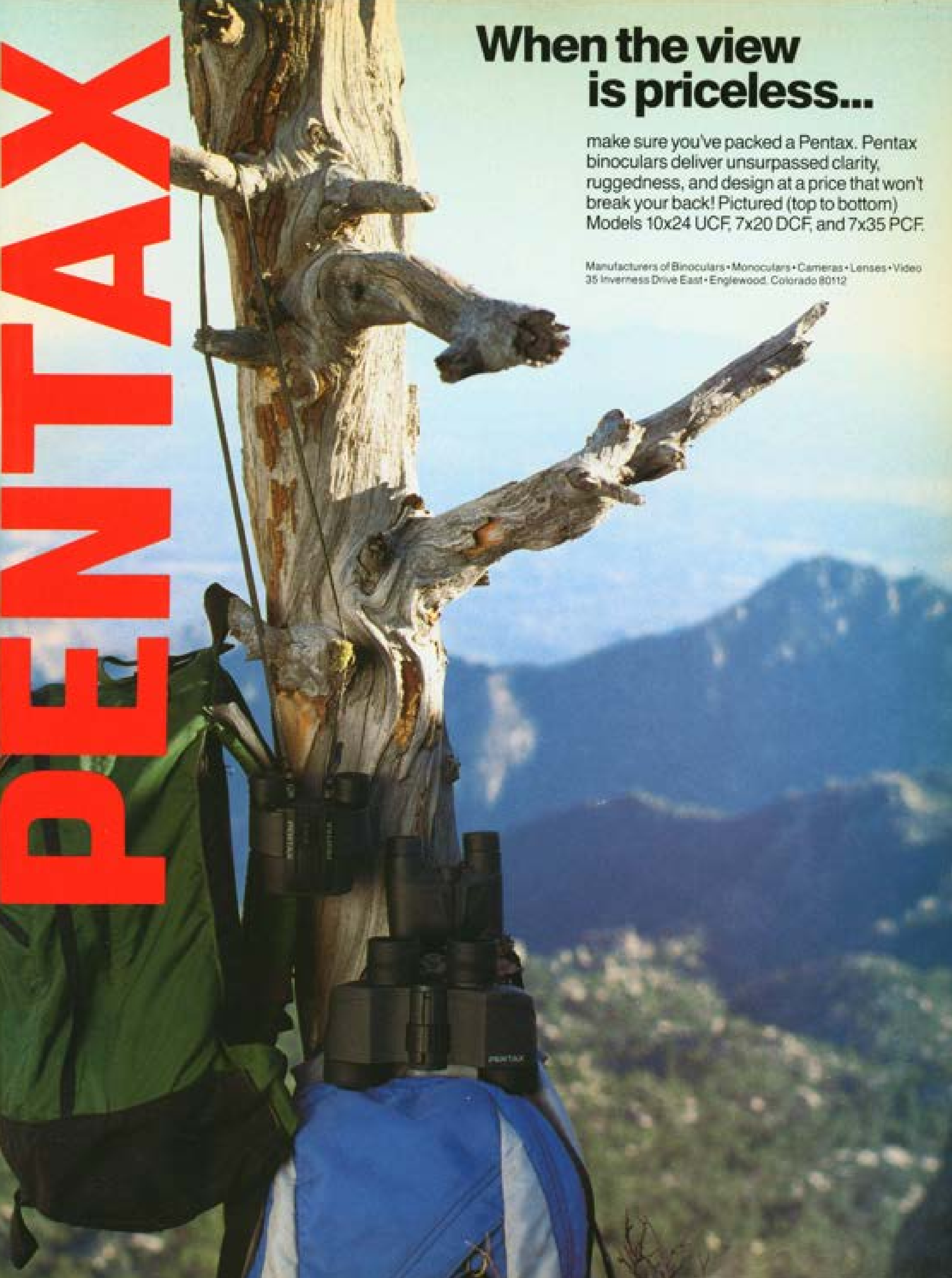
tal writer Benjamin A. Goldman attempt to link low-level radiation from nuclear-bomb tests and reactors to rising incidences of immune-deficiency illnesses such as AIDS, herpes, chronic Epstein-Barr virus, toxic-shock syndrome, and Lyme disease. The authors contend that the Department of Energy has purposely withheld the data needed to establish such a connection for as long as 25 years. . . . Exiled from the Soviet Union in 1973, Zhores Medvedev is now a senior scientist at the National Institute for Medical Research in London and the author of several non-fiction works about his native country. His latest book, ***The Legacy of Chernobyl*** (W. W. Norton; $24.95, cloth) is a diligently researched account of the world's worst nuclear-reactor accident. . . . For those who want to learn the history of nuclear mishaps worldwide, ***The Greenpeace Book of the Nuclear Age*** (Pantheon Books; $14.95, paper) is a comprehensive reference to incidents involving civil and military nuclear reactors. The book begins with a series of essays by specialists in various aspects of atomic energy. . . . ***The Last Whales*** (Grove Weidenfeld; $19.95, cloth), a novel by Canadian poet and literary critic Lloyd Abbey, is a beautifully told horror story, not for the fainthearted. Paying keen attention to marine ecology and natural history, it recounts the fate of an adult blue whale who has been driven nearly mad by mercury poisoning and parasites, and whose habitat is ravaged by nuclear winter. . . . The number of plant and animal species on the verge of extinction in the United States and Canada is staggering, as is evident from the two volumes of ***The Official World Wildlife Fund Guide to Endangered Species of North America*** (Beacham Publishing, 1733 Connecticut Ave., N. W., Washington, DC 20009; $195, cloth, plus $5 shipping). This is an illustrated, encyclopedic reference work with an easy-to-use format. Volume I begins with a timely essay on the importance of the Endangered Species Act; President Bush recently suggested the act should be weakened. —***Mark Mardon***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The Midwater World

Imagine a world without sunlight, without floors, ceilings, or walls. A frigid world filled with jellyfish as clear as glass, fish with teeth like needles, and creatures that shine with an eerie green, blue, or red light in a landscape of eternal darkness.

It may sound like a scene from science fiction, but this place actually exists in every ocean on Earth. It's called the midwater, and it is by far the largest and most mysterious wilderness on the planet.

The midwater is nearly everything between the ocean surface and the sea floor. Since oceans cover about 140 million square miles and average 12,000 feet deep, it's easy to see that the midwater includes an incredibly vast area. Only the top thousand feet receive more than faint sunlight, and most of the midwater exists in total, unending blackness.

We know little about this enormous environment for one simple reason: It's hard to get to. During the past few years, scientists have begun to use small submarines with spotlights, cameras, and collecting devices to explore the midwater. In the Caribbean Sea, California's Monterey Bay, and elsewhere, they've found many plants and animals that have never been seen before.

The most abundant animals of the midwater are the "jellies"—jellyfish and their relatives. The most spectacular jellies are the siphonophores, tiny animals that join to form huge chains, sometimes reaching more than a hundred feet in length. Some fish also call the midwater home, including such fierce hunters as the dragonfish and devilfish, which come equipped with razor-sharp teeth and huge stomachs.

Perhaps the most remarkable discovery about the animals of the dark midwater is that nearly all of them produce their own light, as a firefly does. Scientists think that some animals glow—or bioluminesce—to attract a mate, others to find prey, and still others to scare away predators. Yet many creatures seem to produce light only at certain times, and for no clear reason. The explanation for this behavior remains one of the many puzzles of the midwater that future scientists must solve. ■

At first glance the ostracod (above) looks as though it's made of glass. A closer look reveals tiny tentacles, golden sensory organs, and a load of pink eggs.

Some creatures spend only part of their lives in the midwater. This tiny, nearly transparent rex sole drifts in the midwater until it grows larger and begins to gain color. Then, as an adult, it seeks the safety of the sea floor.

Siphonophores are distant relatives of jellyfish. Their colonies are the centerpiece of the midwater. For food they catch tiny shrimp and other creatures in their tentacles. Many species of midwater fish swim near siphonophores, stealing food from their tentacles and using the large colonies as hiding places.

Joseph Wallace

Scientists at the Monterey Bay Aquarium Research Institute in California unveiled this computerized ROV (remotely operated vehicle) in 1988. Specially designed to explore the midwater, the ROV can probe as deep as 6,000 feet, far deeper than most manned research submarines. It sends video-camera images and other information along a cable to a ship on the surface.

The dragonfish is another bioluminescent midwater animal. Only its shining lure can be seen in the darkness. Small fish that think this is a jellyfish or other delicious meal are grabbed in the dragonfish's powerful jaws.

This delicate jellyfish is a typical midwater resident: It moves slowly through the darkness of the deep sea, searching for tiny animals to eat. Almost all midwater jellyfish are bioluminescent, casting a cold blue or green light.

Animals must find food in unique ways in the midwater darkness. This snipe eel swings its odd jaws back and forth as it swims, hoping to come in contact with a jelly, a shrimp, or some other animal for its next meal.

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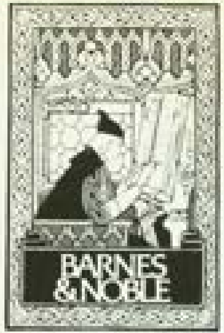

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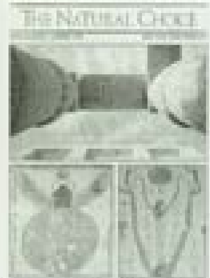

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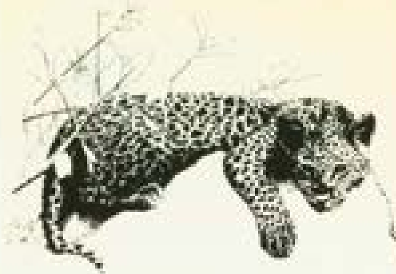

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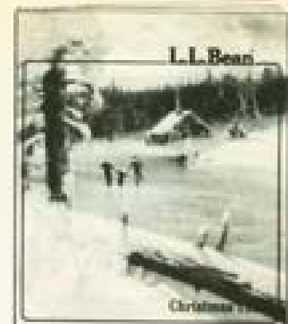

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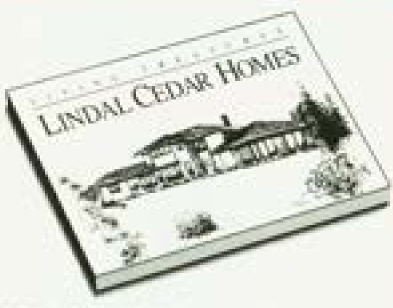

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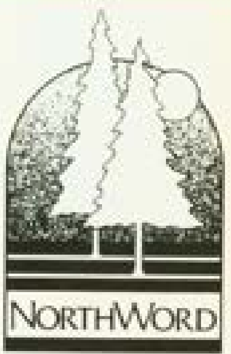

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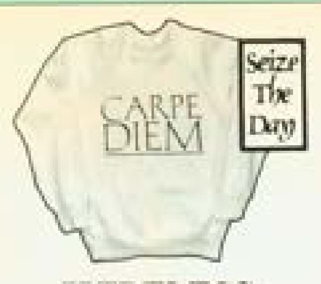

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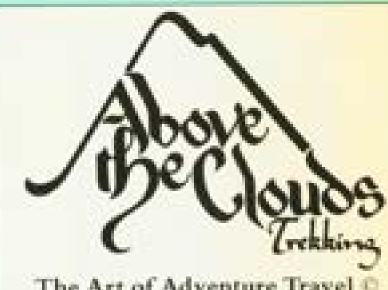

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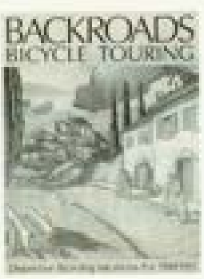

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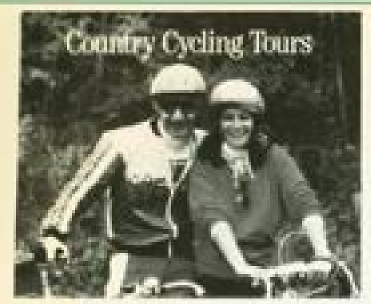

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Look, Up in the Sky!

As long as you're standing around staring into space, you might as well learn something.

Terence Dickinson

LIKE THE ANCIENTS, any modern backpacker, camper, or after-dinner stroller is easily mesmerized by the stars splashed across the night sky. But while our ancestors may have looked heavenward for such practical purposes as devising calendars and navigation systems, most of today's stargazers look to the sky purely for pleasure. On any clear night thousands of amateur astronomers peer into the cosmos to identify constellations, watch for auroras and meteors, chart the motions of a planet or asteroid, seek a remote galaxy, or examine the moon's rumpled and cratered face.

One misconception among those who have never tried stargazing is that fancy telescopes and a college course in astrophysics are prerequisites for comprehending the night sky. On the contrary, all you need to get started are binoculars, a good guidebook with easily decipherable sky charts, and a dark observation site away from city lights. In our age of rampant night-lighting, the latter has become the most difficult to find.

Autumn, with its relatively early sunsets, is an ideal time to begin. Pick a moonless night; after allowing your eyes to adapt to the dimness, look for the Milky Way, a misty ribbon arching from northeast to southwest all evening at this time of year. If you can see it clearly, your site is dark enough for successful stargazing. Scan the powdery corridor with binoculars to grasp the sweep of glittering stars. This is the "Main Street" of the Milky Way Galaxy, home to our solar system.

The vast distances between the stars in our galaxy (the closest star to the sun is 25 trillion miles away) mean that even though they are moving, the relative position of the stars changes insignificantly compared to the expanses between them. As a result, the night sky we see looks the same to us as it did to our grandparents and to theirs.

The great reaches of space also mean that what we see when we scan the skies is ancient light. As the tiny spears of light from the stars enter our eyes, a journey that may have begun centuries ago ends. For example, five of the seven stars in the Big Dipper form a nearby star cluster about 75 light-years away. Their light takes a human lifetime to reach Earth.

A few of the brightest starlike objects looming overhead are not remote suns but fellow planets in our solar system. Stargazers learn to distinguish one from the other. For example, the brightest object due south as darkness falls in September and October this year (and next) is the planet Saturn.

Most rewarding of all celestial quarry are the galaxies, vast islands of billions of stars. They look like pale smudges, barely perceptible using binoculars or a small telescope. But the knowledgeable observer who tracks down a galaxy using a sky chart is rewarded by seeing one of the most distant objects humans can behold.

Just about any celestial body visible to the eyes will be clearer if you use binoculars. They'll help you locate clouds of gas and dust called nebulas, where stars are being born, or examine clusters of stars that look like a handful of diamonds spilled on black velvet.

In a dark, moonless sky, standard 7x50 binoculars can pick up more than 50,000 stars, compared to the 4,000 or so visible to the naked eye, and star colors become more evident. (Besides white, stars range in color from sapphire blue to yellow, orange, and red, depending on their surface temperatures.) From two to four of Jupiter's largest moons can be seen next to that brilliant planet. Uranus and Neptune, too dim to be seen with unaided eyes, are easy targets for

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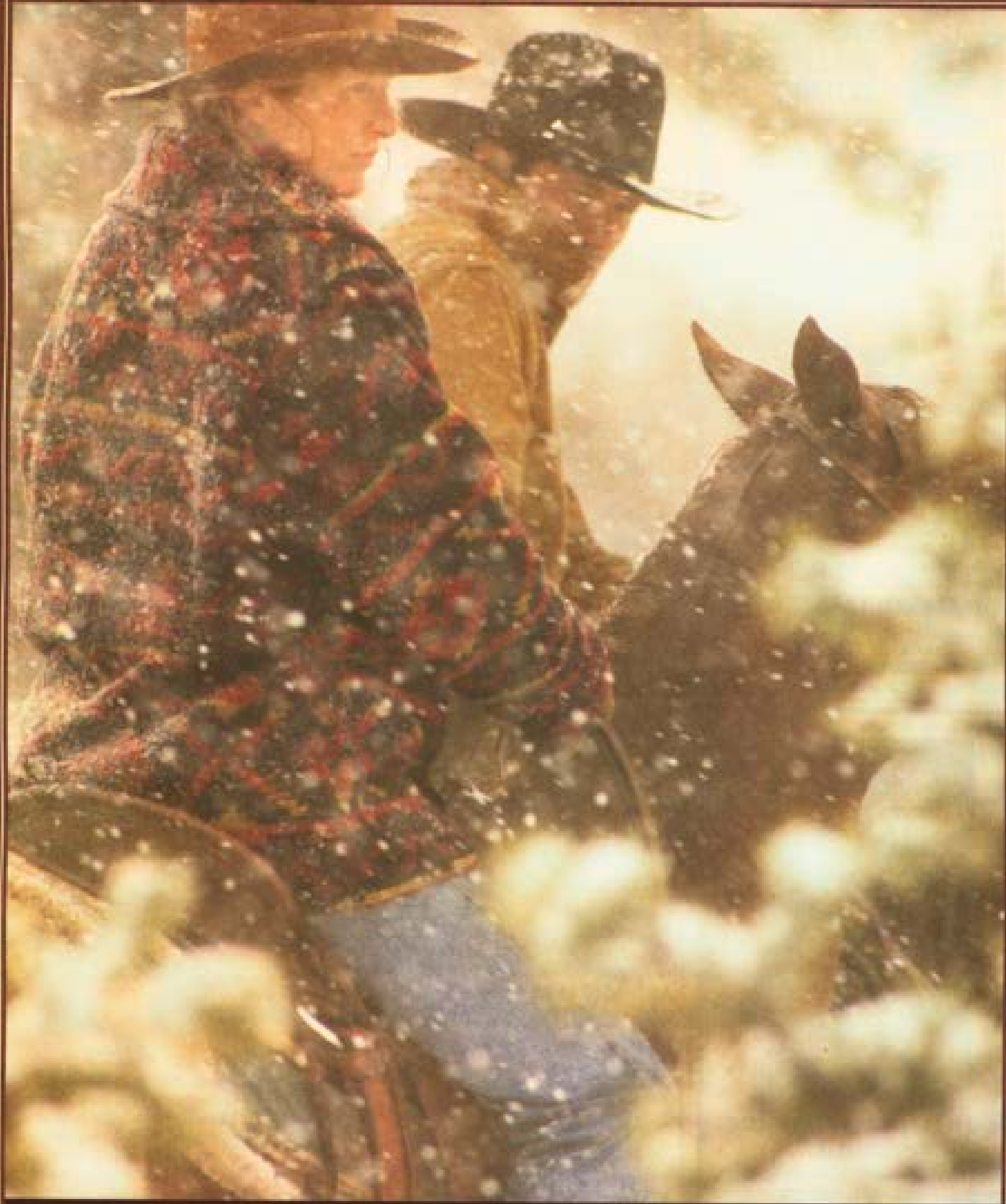

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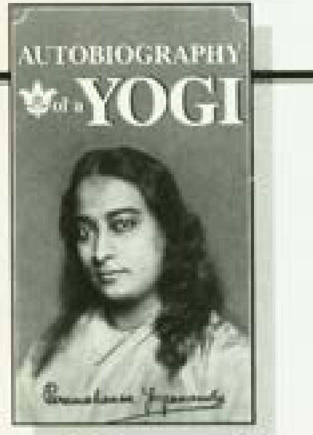

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binoculars. The Andromeda Galaxy, a huge star system larger than the entire Milky Way, can be clearly seen as an oval smudge nearly overhead in autumn and early winter. Closer to home, binoculars reveal at least 100 craters, mountain ranges, and subtle shadings on the flat plains of our own moon.

Binoculars best suited to stargazing have 40- to 50-millimeter main lenses and a magnification of seven to ten power; I recommend those with 7x42, 7x50, 8x40, or 10x50 ratings. All binoculars have this two-number designation: The first figure spells out the instrument's magnification (how many times closer an object will appear through the lenses than it would if seen by eyes alone); the second indicates the diameter, in millimeters, of the main lenses. The larger the diameter, the more light gathered—a critical factor for night viewing.

The worst mistake you can make is to rush out and buy a telescope. Fancy gear won't convert a star-peeker into an astronomer, nor is it necessary for learning the fundamentals. A typical $200 "beginner's" telescope invariably has a jiggly tripod and mount and inferior optical components.

Instead, spend a year or so drinking in the night sky simply with unaided eyes and binoculars, becoming familiar with the constellations as they change from one season to the next. You can do this even under light-polluted city skies, because the brightest stars of the main constellations will still shine through. In fact, constellations are often easier to identify without the background scatter of fainter stars.

After this apprenticeship, you may be ready to graduate to a quality telescope. These start at about $300, though the sky's the limit. But many seasoned stargazers are content to scan the cosmos using a minimum of equipment, or simply to let their eyes alone soak up the ancient starlight. ■

TERENCE DICKINSON, *author of* NightWatch *(Camden House/Firefly, 1989), teaches astronomy at St. Lawrence College in Kingston, Ontario, Canada.*

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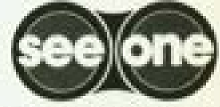

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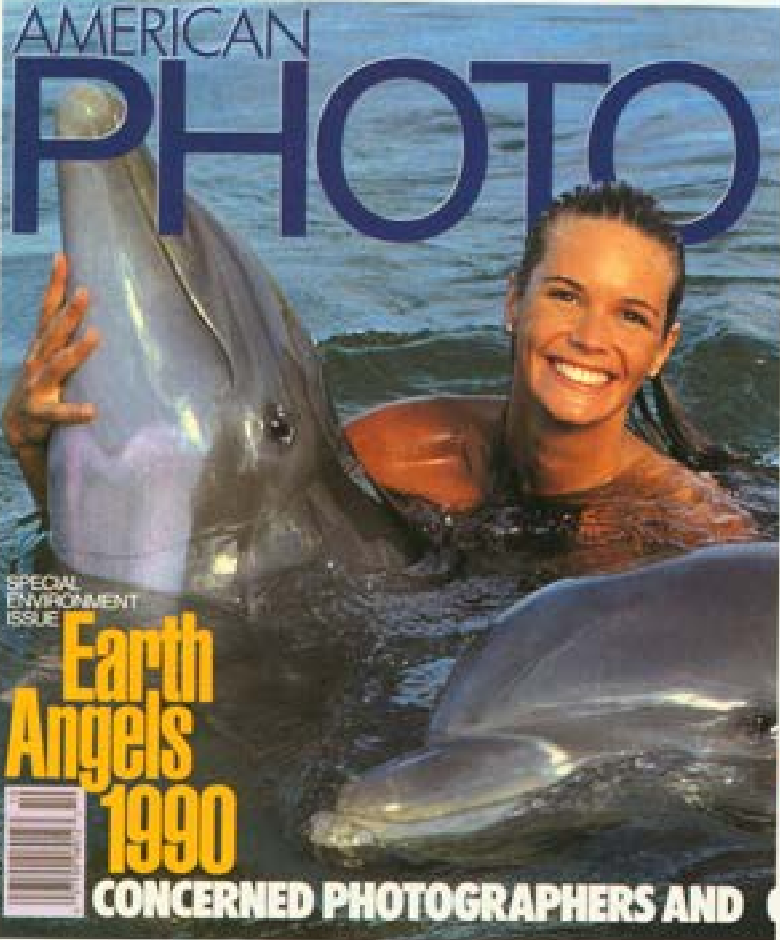

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"IF PEOPLE PULL DOWN NATURE . . ."

Continued from page 57

creek's snow-covered bank as my collie watched from above.

This part of the field was covered with dandelions. In the branches of one of the old trees were the remnants of a treehouse built a long time ago: just four boards, one of them marked with black soot and rusted nails. I remembered a small treehouse down in this section of the woods, not as big as the triple-decker that my friends and I had built further up where the trees were now gone.

The end of the park was marked off with barbed wire. Beyond the wire were more woods, as the schoolkids had said. I could barely see the old farmhouse hidden in the trees and brush. When I was a boy, an old horse had grazed near a swamp in those woods; I had to stand on a fence to mount him, and I'd ride wherever he chose to go.

From the fence on, the woods were dark and thick. Maybe the swamp was still down below where the dam had been broken out, where at dusk I had seen, in one of those blinding flashes, a great heron lift on the air, lift up above the old barn, which stared with vacant windows out across the swamp.

My dog was gone, and no doubt the horse was gone as well, but maybe the swamp and the barn were still there. Maybe sometimes a great heron sailed through the sky. Maybe that part of childhood still existed. If I had been a kid, I would have crossed the barbed wire and gone down there.

It was good to know that the best part of my childhood was still safe. I turned and walked back to the car, and as I passed the little sign, I thought: Here's to you, Cap Garvin, whoever you are. ■

RICHARD LOUV *is a columnist for the San Diego Union. This article is excerpted from his book* Childhood's Future, *to be published by Houghton Mifflin in January.*

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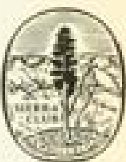

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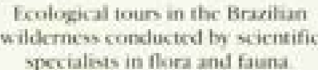

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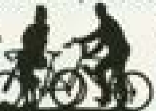

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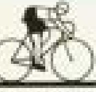

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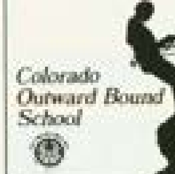

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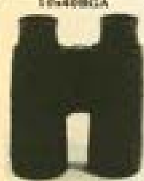

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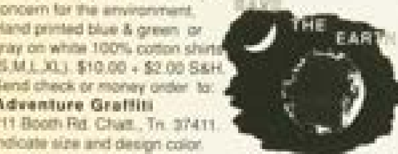

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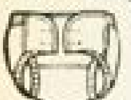

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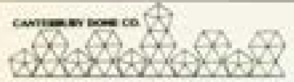

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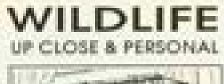

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QUESTIONS & ANSWERS

I'm not sure how to take care of the two baby water turtles recently given to my son. Wouldn't it be better to return them to the wild? (Jane Brundage, Cherokee, Iowa)

Just putting your turtles in a little bowl with a plastic palm tree in the middle will not keep them happy and healthy. The New York Turtle and Tortoise Society estimates that it takes at least $100 to set up a proper home environment for a pet turtle. You will need, at a minimum, a good-sized aquarium with a water filter and heater. A little research in a pet shop or library should help you identify the species of your "water turtles" and any special requirements they may have.

If your baby turtles were under four inches long when they were given to you, they were probably "black market" reptiles. It is illegal to sell turtles smaller than that because they can harbor salmonella bacteria; the small turtles that used to be sold as commonly as goldfish would occasionally infect children with the disease. Don't let your child play with the turtles (for the animals' sake, as well as the kid's). Always wash your hands with soap and hot water after handling the turtles or cleaning their tank.

Perhaps most important, don't release those pet turtles into the wild. Chances are they won't be able to adapt to their new environment—but if they should survive, and are not a native species, they could become pests, spreading disease and elbowing local turtles out of their ecological niche.

Fax paper always smells terrible. Do I have to worry about inhaling the fumes from the processing chemical? Also, can fax paper be recycled? (Sean Duffy, Wausau, Wisconsin)

We discussed the possible dangers of fax aroma with spokespeople for several fax manufacturers, none of whom (as you might expect) saw any problems with normal exposure.

A spokesperson for the federal Consumer Products Safety Commission says that there have been no complaints of fax-related illnesses thus far, so there has been no investigation into the health effects of heavy fax-sniffing. The consensus seems to be that minor exposure shouldn't be health-threatening.

There is no processing chemical in the fax machine itself, by the way. The smell comes from the thermal coating on the fax paper as it comes into contact with the hot printing head inside the device.

This thermal coating causes some problems when recycling fax paper. An official of West Coast Salvage and Recycling tells us that some recycling plants will take fax paper mixed in with other low-grade paper such as office wastepaper and blueprints; others will not. Call your local recycling center to find out if and how they'll accept your old faxes.

I want to know more about the new propellant in aerosol spray cans—is it as bad as the old one was? (Gary Hayman, Elmwood, Connecticut)

There are several types of aerosol propellants being used to replace chlorofluorocarbons (CFCs); these have bases of butane, propane, or carbon dioxide. While not a threat to the stratospheric ozone layer, the byproducts of these chemicals can combine with other air pollutants with the aid of sunlight, creating ground-level ozone (smog), according to a resource specialist for the Natural Resources Defense Council. And carbon dioxide is itself a notorious contributor to the greenhouse effect.

In addition, there's a newcomer on the ozone-layer blacklist: 1,1,1-trichloroethane, also known as methyl chloroform, or just plain 1,1,1. While not a propellant, it is found in many aerosol products, including hair sprays and art supplies, where it can be the solvent for other active ingredients or the main ingredient itself. 1,1,1 is reportedly responsible for 16 percent of current stratospheric ozone depletion. Be sure to read product labels carefully, and avoid those containing 1,1,1.

A booklet with more information about 1,1,1 can be obtained for $6 from the Natural Resources Defense Council, 1350 New York Avenue, N.W., Washington, DC 20005. ■

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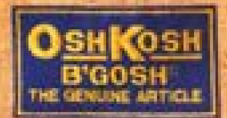

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