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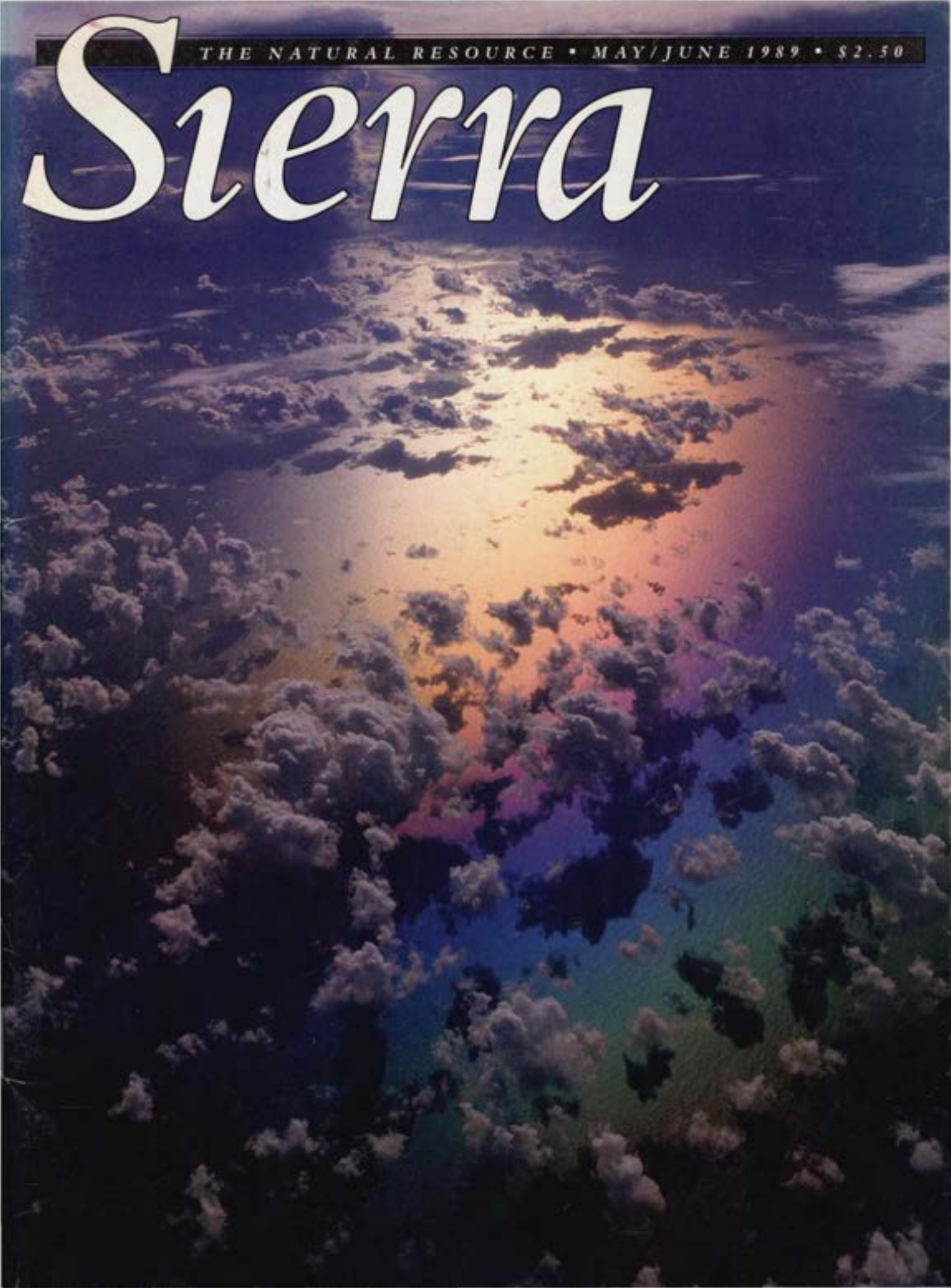

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THE NEXT STEP.

VOL. 74/No. 3 MAY/JUNE 1989

Sierra

COVER: An aerial view of a rainbow off the Madagascar coast. For a down-to-Earth look at the minicontinent, see page 78.
Photo by Frans Lanting.

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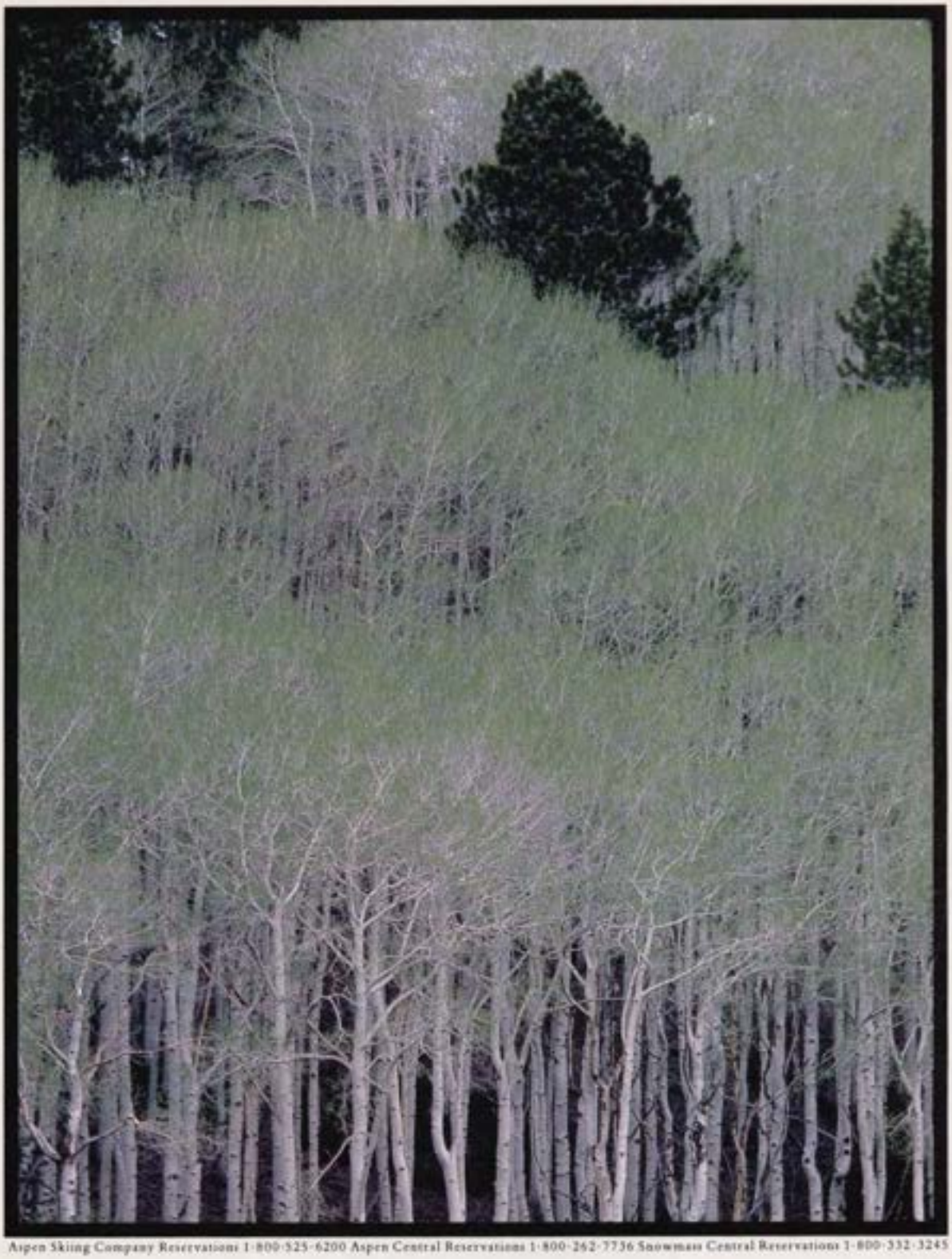

This summer, people will go to the 40th Aspen Music Festival, Snowmass Rodeos, Dance Aspen, Children's Festival, Art Fairs, the Aspen/Snowmass Food & Wine Classic, the Pitkin County Air Show, the Anderson Ranch Arts Workshops, the International Design Conference, Ruggerfest, the Hot Air Balloon Festival, and the Historical Society's Ice Cream Social. [*Ironically, most people come here to relax.*]

THE ASPENS
SNOWMASS · BUTTERMILK
ASPEN MOUNTAIN

Sierra

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1. NO PURCHASE NECESSARY. To enter, complete entry form (questions must be answered) or write same information on a 3" x 5" piece of paper and mail to: Giant Kiwi Tour Sweepstakes, P.O. Box 1819, Palatine, IL 60078.
2. Enter as often as you like, but each entry must be mailed separately. Not responsible for lost, late or misdirected mail. All entries must be received by November 6, 1989.
3. Winner will be selected in random drawing from all entries received, by Marden-Kane, Inc., an independent judging organization, whose decisions will be final. Prize, worth approximately $7,000.00, will be awarded. Chance of winning determined by number of entries. Prize is not transferable. No substitution for prize.
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Just look at what the Giant™ "Kiwi Tour" Sweepstakes includes!

- A 9-day trip for two to the beautiful South Island of New Zealand during the Spring of 1990 including:
- Round Trip air transportation.
- 7 days free car rental, with collision insurance, unlimited mileage, and bike rack.
- Two Giant All-Terrain bikes for tour use.
- 5 Vouchers for 5 nights at private Bed and Breakfast host homes and farms.
- 1 night at the Airport Travelodge Hotel.
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- Two brand-new Giant All-Terrain Bicycles to enjoy at home!

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Mail your entry *today*. There's a whole new world of beauty, hospitality and cycling experience waiting for you. The Giant "Kiwi Tour" Sweepstakes is a world-class adventure made possible by Giant, the world-class bicycle manufacturer.

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Please answer the following questions carefully, some of the questions have multiple answers.

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Travelodge, maps, information, briefing on road rules, New Zealand Goods and Services tax, plus 2 Giant All-Terrain bicycles.

5. Open to residents of USA age 21 or older, except employees and their immediate families of Giant Manufacturing Co., Ltd., its affiliates and subsidiaries, agencies, and Marden-Kane, Inc. Void wherever prohibited and restricted by law.
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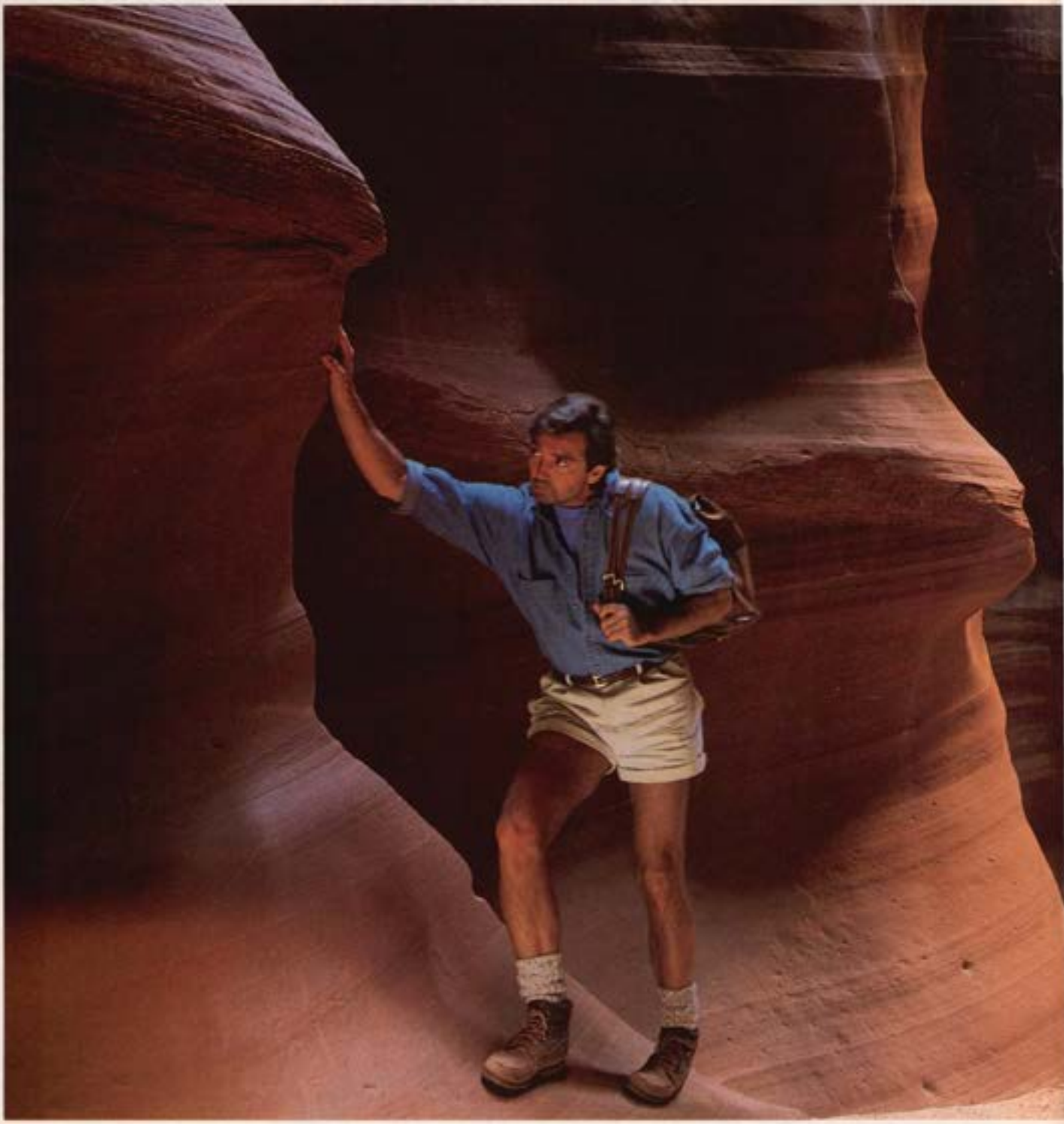
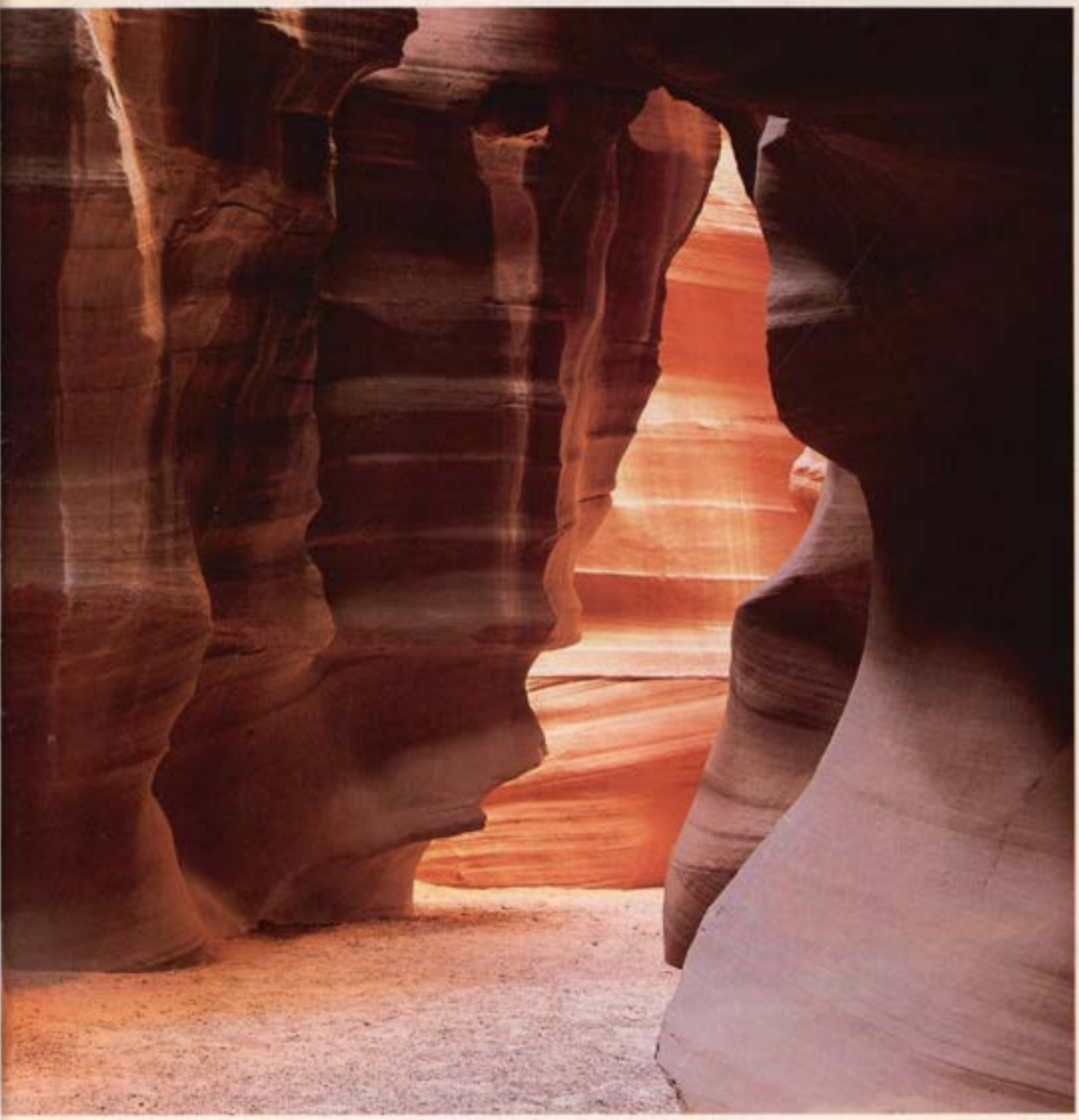


Unlike some designers who slavishly follow the winds of change, we Timberland people take our inspiration from the winds that never change. Be they the mighty gales that hammer the Carolina coast, the sandstorms that parch the Southwestern canyons, or the tropical murmurs that dance across the Pacific, calling you to points unknown. And although you may admire our boots, shoes and cloth-



ing in the setting of a fine store, it may take a different setting for you to see their deeper worth. A setting shaped by their true elements.

Wind, water, earth and sky.

Timberland

Boots, shoes, clothing, wind, water, earth and sky.

LETTERS

INSPIRED TO WRITE

The special focus on personal action and commitment in your March/April issue was refreshing. Whether intentional or not, combining "The Children's Clean-up Crusade" with the article about a rafting trip to clean up the Rogue River in Oregon and the story of Pete Seeger's personal dedication to New York's Hudson River Valley was both inspired and inspiring.

Yes, it is important to support organizations that are working on a large scale on big issues. But it's also important to keep in mind that individuals can and do make a difference by their personal acts. Seeger's motto, "Think globally, act locally," ought to be added to your masthead. Thank you for reminding us that sitting back and waiting for someone else to solve a problem is not the best way.

Marc H. Rosenberg
McLean, Virginia

POLLUTED PAGES?

Cancel my subscription immediately! "Deep Ecology" (March/April) is absolutely *gross*—and certainly should not find outlet in a magazine of the caliber of *Sierra*. If I wished to read pornography, I would buy it at the newsstand. Shame on you!!!

Mrs. B.C. Frank
Big Pine Key, Florida

"Deep Ecology" was the best article I've seen in *Sierra*—really great, and *much* better than the usual stories.

William H. Skelton
Knoxville, Tennessee

Never did I expect to find such a disgusting and pointless article in a Sierra Club publication. The language used may be acceptable to the Supreme Court, but in the interest of decency it has no place in the Sierra Club or its publications.

Tasker L. Edmiston
Monterey Park, California

I started to read "Deep Ecology" and found your magazine trash. I refuse to let it pollute my mind with vulgarisms and four-letter words. Moral pollution is worse than physical pollution.

Rev. Lynn A. Wiseman
Vincennes, Indiana

"Deep Ecology" has some meanings that seem to me unfortunate for a strong environmental movement. I hope the other ten essays in Page Stegner's forthcoming Sierra Club Book [*Outposts of Eden: A Curmudgeon at Large in the American West*] don't show the same divisive, sectarian ideology. It breaks us up when we should be uniting against common enemies.

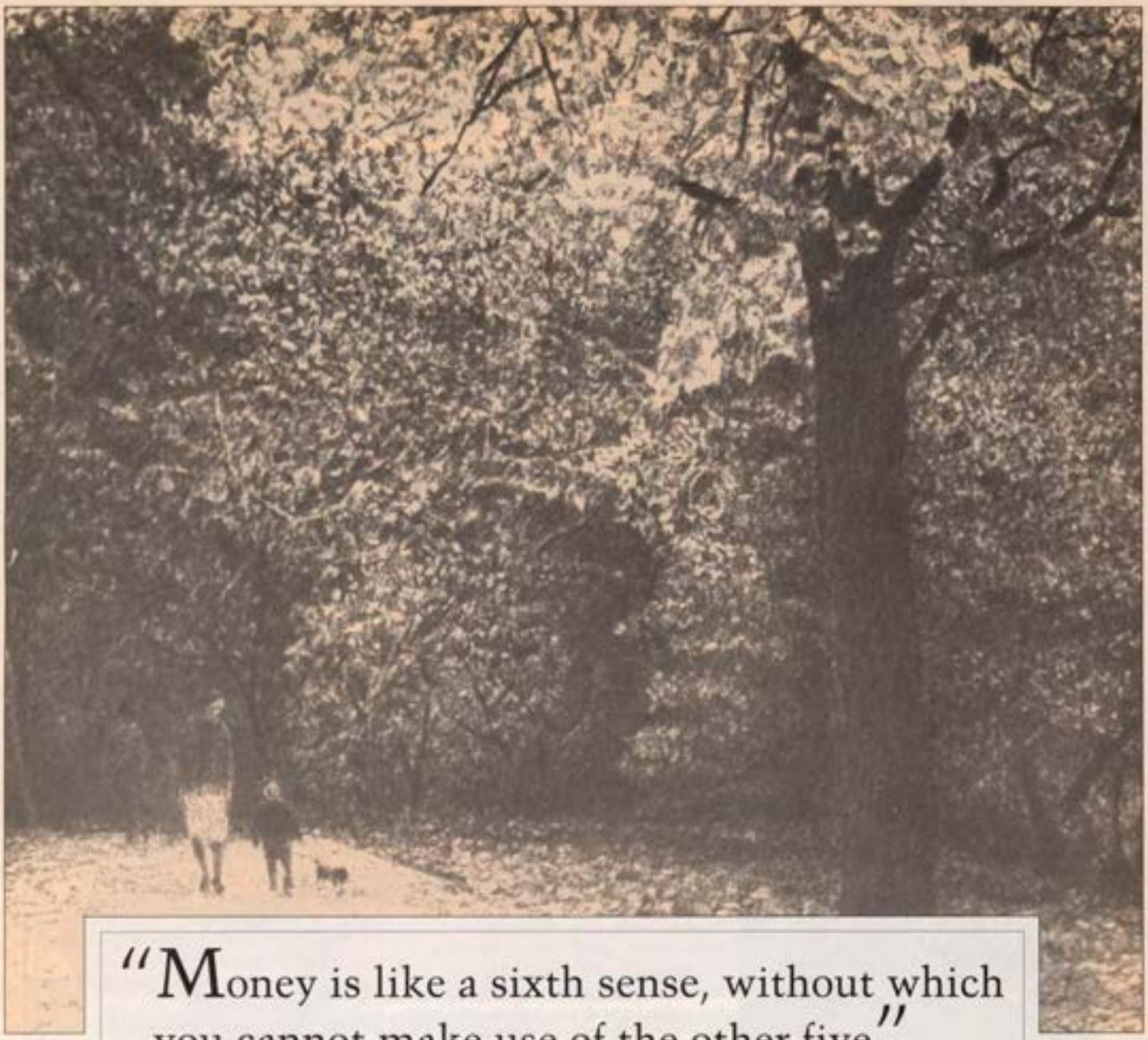
The students and their professor are the objects of attack in this satiric story. But the real enemies are RV types, houseboat polluters, the Army Corps of Engineers, high-tech big business, multinational corporations, and the like, not the deep-ecology movement, however much we may disagree with their misanthropic theory.

Further, Stegner's stereotype of deep ecologists (or Earth First!ers) is factually wrong: They're not pampered college brats without wilderness skills, knowledge, or principles. He doesn't even observe his students carefully—how many principled non-dairy vegetarians smoke cigarettes or depend exclusively on tofu for food? Legitimate satiric stereotypes should be factually based on majorities in the group. Stegner doesn't even seem to like students, a bad sign for a university professor.

Stegner labels himself a curmudgeon in the subtitle of his book. Curmudgeons can be useful agents for beneficial social and environmental change if they get their enemies right. If they don't, they're just silly, tiresome, and troublesome.

Jack Weston
Pauma Valley, California

"Deep Ecology" was a gem, and evocative for me. I took a raft trip on the San Juan 15 years ago, when hardly anyone even knew where it was. And I *know* those spoiled, rebellious, smart-mouthed kids, as distasteful as they un-



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. . . W. Somerset Maugham

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THE LOGIC OF GEO-LOGIC

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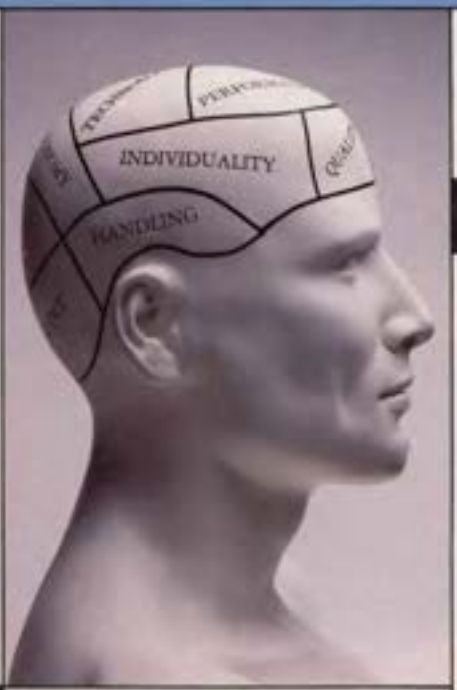
And now, there's the next logical step in the logical evolution of family automobiles.

The Geo Prizm. A Japanese-designed, American-crafted vehicle so technologically-advanced, it offers the engineering, spaciousness, versatility, and performance of 1990 automobiles today.

Prizm is the latest in a full line of logical new economy, sports/utility, and family automobiles now at selected Chevrolet dealers. Experience the unique combination of Geo quality, performance, practicality, and value today.

It's the logical way to go.

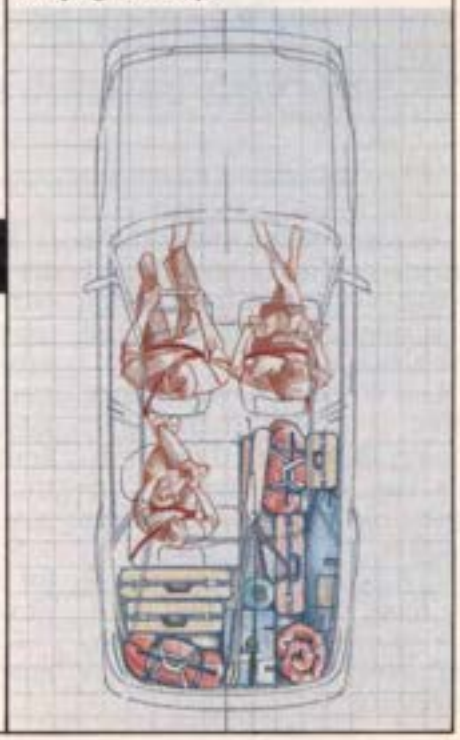


execution of fine, advanced automobiles. From state-of-the-art engine design to new levels of space utilization, Geo Prizm is the ultimate realization of dedicated Japanese-American teamwork.

RATIONALE

The Totality of Usable Space.

Geo Prizm has been configured as both a four-door sedan with traditional trunk and a highly-versatile five-door hatchback. Each model is a masterpiece of expansive space utilization. Interior volume of the hatchback measures an extraordinary 99.7 cubic feet and the 4-door sedan, an exceptional 94.1 cubic feet. This extensive area is easily reached and utilized through wide-openings plus fold-down rear seat on the hatchback and split folding rear seat on the LSi sedan. From front seat headroom of 38.3", 17.2 cubic foot of hatchback cargo space, Prizm sets new standards of load carrying efficiency.



STRONG POINT

The Sports Sedan of Tomorrow, Today.

Highly-civilized, roomy family carrier. Sports sedan of vigorous performance. The extraordinary dual personality of Geo Prizm starts with a new 16-valve, double overhead cam, fuel-injected engine ideally balanced for performance (102 horsepower) and economy (EPA estimated MPG city 27 and highway 33).

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The Triumph of Teamwork.

The genius of contemporary Japanese engineering. The resurgence of traditional American craftsmanship. Both are combined in the 1990 Geo Prizm. Flagship of the new Geo-logic evolution in automobiles. Prizm is the latest total-quality offering from the history-making General Motors-Toyota joint venture in Fremont, California. There, a unique combination of automobile experts from two nations meld intelligence and technology into dedicated development and

FAMILY PLAN.

GEO PRIZM
HATCHBACK SEDAN

GEO PRIZM LSi
4-DOOR SEDAN

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REASON

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The 1990 Geo Prizm has been brilliantly conceived to go that "extra mile" in luxury and convenience. Tinted windows. Reclining Front seats. Remote side mirror. Velour interior trim. Steel-belted radial tires. Halogen headlights. Front door storage pockets. Even slide-out cup holders are but part of the new standards of standard equipment that help give Prizm leadership for today and the future. The technological advantages of a Japanese-built automobile. The economic advantages of an American-built one. That's the logic of the new 1990 Geo-Logic Prizm.

Geo

At selected Chevrolet dealers.

For dealer nearest you: Call 1-800-Dial-Geo.

questionably are. This account is great, and I will buy Page Stegner's book as soon as I can get it.
Eugenia Hull
El Cerrito, California

PETE'S PARTY A PROBLEM

I was shocked and disappointed to find Pete Seeger featured in the March/April issue ("Conservation Profile"). Because of his affiliation with the American Communist Party I feel there are other dedicated environmentalists deserving of recognition who believe in the same freedoms that over 57,000 Vietnam veterans gave their lives for.
Mary K. Gammel
Buford, Georgia

DEMENTED GRAMMAS ON GLUE

How ludicrous! If Grandmothers for Peace ("Afield," March/April) think their efforts contributed to the INF treaty, they have been sniffing too much glue while sending out mailers. The INF treaty was signed and is being implemented by the Soviets for three reasons: (1) their devastated economy will not let them continue with their historic massive military buildup; (2) U.S. rearming threatened them; (3) the Strategic Defense Initiative scared them, in *that* order.

If Grannies for Peace think that they had any effect on the policies of the Reagan administration, they are demented; if they think that they or any other peacenik group worldwide had *any* effect on the geriatric dictatorship in the Kremlin, they are insane. Peaceniks apply pressure only to Western democracies; the Soviets neither have respected nor ever would respect any similar organizations.
John Bakos
Galveston, Texas

LEAVING NO STONE RETURNED

Congratulations on bringing the treasures of Nevada's backcountry to the attention of Sierra Club members who may have given this oft-maligned state short shrift ("Elko to Eden," March/April). No issue could tug harder at the hearts of public-lands activists, and Nevada should rank high on our priority list until we win significant wilderness designations.

No congratulations at all, however—even to such a credentialed and battle-scarred activist as subject Bob McGinty—for discussing resource conflicts while his child "prowls the summit, returning with pockets so full of quartz and mica specimens that his shorts are sliding down his hips," nor to the writer and editor who allowed such words out into the world with our name on them, without clarifying that Dad (as I trust he did) reminded the kid to leave the stuff behind where he found it, once a thorough examination had been undertaken for next fall's science class.

Sierra Club leaders and publishers, of all people, need to set any number of examples during their public-lands adventures, not least of which is to "take nothing but pictures."
Alan Weaver
San Francisco, California

EARS, KNEES, AND THIGHS

A small thing in the cosmic picture, but I'd like to refute Stephen Kasper's dogmatic statement about the use of zinc oxide ("Outdoors," March/April). I do indeed "slather the greasy opaque paste

on larger areas of skin" than my nose. If I'm sailing, I rub it on my knees and thighs to avoid getting "sailor's knees"—sunburned knees and untanned ankles. I also rub it on the backs of my hands when I'm fishing or involved in some other activity that exposes my hands to lots of sun.

As Kasper points out, zinc oxide really blocks all sun and is a godsend when one is going to be suddenly exposed to lots of sun and it's too hot to cover up. Rubbed into skin, it will prevent sun rays from invading for several days and through repeated washings. It does not add favorably to one's appearance, but on a camping trip I don't care. If rubbed into sunburned skin it will help limit the pain and prevent further exposure. It's great on earlobes too.

Roberta B. Piper
Murphysboro, Illinois

CHARDONNAY CHOO-CHOO

Your March/April "Hot Spot" about efforts to block the Napa Valley Wine Train is disturbing because it shows that many environmentalists fail to grasp the fact that rail transportation is part of the solution to controlling excess growth and its many associated problems.

It seems to me that anyone who cares about long-term preservation of the Napa Valley's rural character should support anything that provides an opportunity to stop driving automobiles. While it is true that the Wine Train as proposed will be more of a tourist novelty than a serious transportation alternative, the consequences of blocking its development could result in loss of the railroad right-of-way, making future development of rail transportation prohibitively expensive.

Jeffrey English
Troy, New York

A lot of influential people visit the Napa Valley, and the train just might convince them of the benefits of this alternative way of moving around.

Harold Drake
San Carlos, California

The Wine Train will be successful in taking cars off the road—to the detriment of local business and the wineries. What we have here is a debate between competing economic interests, not between pro- and anti-environmentalists.

E. MacDougal
St. Paul, Minnesota

CLUB CULINARIA

Maybe the High Trippers of 1902 were glad to get beans and corned beef for dinner ("High Tripping," January/February), but the High Trippers of the '30s and '40s dined royally. The evidence? A pair of tiny, tattered books I used to carry in my jeans pocket, in which the nightly menus are carefully recorded.

For example, you published a photo of a 1941 campfire at Benson Lake. Here's what those 200 High Trippers had for dinner that night: soup, steak, mashed potatoes and gravy, tomato aspic, chocolate pudding, and coffee or tea. No beans or corned beef!

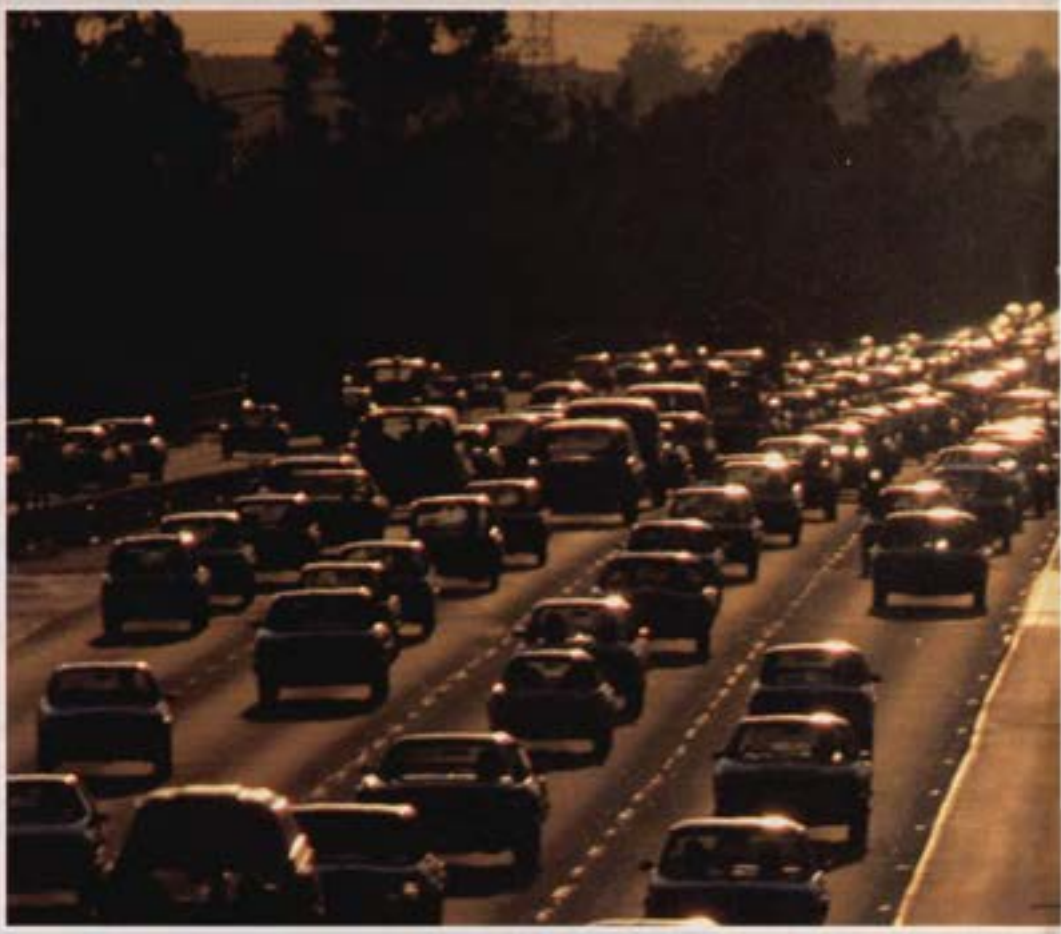
Barbara Norris Bedayn
(High Trip assistant cook)
Orinda, California

CREDIT WHERE IT'S DUE

The photo of Pete Seeger on page 82 of the March/April issue should have been credited to David Redfern/RETNA.

We find ourselves . . . at a critical point in the evolution of American cities, and the main enemy of green cities is, in fact, the private car. And the car is everywhere triumphant. Indeed cities everywhere on Earth, not just in America, are being overrun by cars. The greatest cities that humans have contrived in the whole history of our species are in danger. And here, cars are multiplying faster than people. They're outbreathing us, too. They're using up our land area. They're using up our economic strength.

ERNEST CALLENBACH
author of *Ecotopia*



CARS CARS

GIVING TO AUTOS, TAKING FROM TRANSIT

A lot of people wonder why effective public-transportation systems—trains and trolleys in particular—are so uncommon in the United States. The boiled-down answer is that corporate conspirators and an indifferent public have left mass transit in a shambles.

Not too long ago metropolitan America was served by extensive networks of inter- and intra-urban electric transit systems. But between 1932 and 1949, as investigative reporter Russell Mokhiber documents in *Corporate Crime and Violence* (Sierra Club Books, 1988), General Motors, Firestone, Standard Oil of California, and other companies successfully schemed to buy up more than 100 electric systems in more than 45 cities. As a result, trolley cars in New York, Baltimore, Philadelphia, St. Louis, Salt Lake City, and Los Angeles (among other cities) disappeared, to be replaced by gasoline-fueled, rubber-tired GM buses.

After that deed was done, Americans seemed to acquiesce to the primacy of the private car. Few have spoken up for mass transit, and so governments dip into their transportation coffers primarily to service cars.

"Automobiles are so

ARMAN, LONG TERM PARKING, 1982. AUTOMOBILES IN CONCRETE. JOUY-EN-JOSAS, FRANCE

By Mark Mardon

GARY BRASCH/APERTURE PHOTOBANK

CARS CARS CARS

heavily subsidized that the nation's public transportation system has been bankrupted for lack of patrons," says Stanley Hart, who chairs the transportation committee of the Sierra Club's Angeles Chapter.

As Hart sees it, the sticker price on a new car, as high as it may seem, hardly begins to reflect the true cost of the vehicle. Not factored in are such extras as highway construction, road repair, police patrols, paramedic services, and property taxes lost when land is converted to freeways. Such hidden costs are borne by the public at large. Local, state, and federal governments, Hart contends, effectively subsidize each car and truck in this country to the tune of $2,350 every year, amounting to some $400 billion annually.

Hart maintains that price stickers also fail to account for a car's environmental costs: acid rain, urban sprawl, noise pollution, billboard blight, the greenhouse effect, disruption of animal habitats, and oil slicks, among many others (see chart on pages 24–25).

To get people out of cars and back onto trains, Hart argues for a pay-as-you-go system. "The cost of automobile-related public services ought to be paid at the gas pump," he says.

Michael Renner of Worldwatch Institute in Washington, D.C., agrees: "A full accounting of the manifold subsidies the automobile receives, plus the environmental and health costs it entails, might cool the passion people feel for cars." ■

RENE BURRI/MAGNUM

Where Did That Oil Go?

The ad shown above recently appeared in magazines throughout the United States. Paid for by the U.S. Council for Energy Awareness, a lobby funded by the nuclear industry, it argues that the more we use nuclear energy to generate electricity, the less we'll have to depend on foreign oil.

That claim, environmentalists assert, constitutes a blatant attempt to bamboozle the public.

For one thing, the ad does not explain that the United States relies on Middle Eastern OPEC nations for only 22 percent of net oil imports —less than 6 percent of annual U.S. consumption.

More to the point, readers are led to believe that all that Middle Eastern oil goes to produce electricity. In fact, though, only 3.5 percent of the oil consumed within U.S. borders each year is converted to electricity. Where does the rest of the oil go?

Cars, trucks, buses, and airplanes use far and away the bulk of it—they consume a whopping 63 percent of the oil used in the United States from both domestic and imported supplies. The remaining 33.5 percent is used in other ways by the nation's household, commercial, and industrial sectors.

Environmentalists insist that U.S. dependence on oil, whether domestic or imported, can't be reduced significantly by a buildup of nuclear power, as this ad calls for. What's needed, say informed activists, is increased public transit to offset the use of private cars, and production of fuel-efficient vehicles only.

In the long term, many energy experts see gasoline being replaced by alternative fuels. The most promising of these appears to be hydrogen, which in fuel form is 15 to 45 percent more energy-efficient than gasoline. Hydrogen can be cleanly extracted from water by means of solar energy and has an important virtue: It is the simplest, most common element in the universe. ■

Blight, Smog, Gridlock,

LAND IMPACTS

VEHICLE/FUEL PRODUCTION

Fuel spills during transport from refineries to gas stations

▲

Mine tailings from metals-mining for auto parts

INFRASTRUCTURE CONSTRUCTION

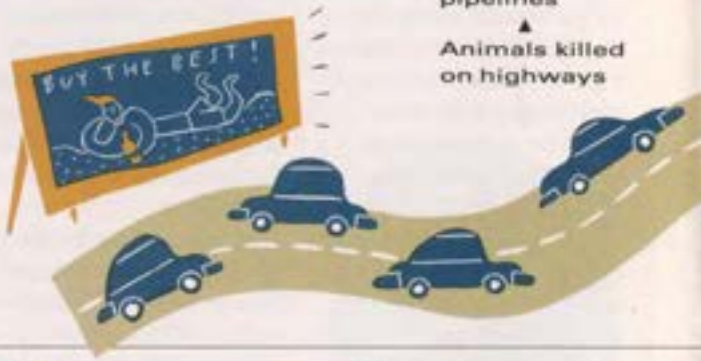
Land paved for roads and parking lots

Acres of land in the U.S. paved over for roads and parking lots: 38,400,000[A]

▲

Blocking of animal pathways

SYSTEM OPERATION



Spills from fuel pipelines

▲

Animals killed on highways

DISPOSAL

Dumping of engine oil

[A] (*Worldwatch*, July/August 1988) [B] (*Statistical Abstract of the United*

Sprawl, and Death: The Automobile Takes Its Toll

WATER IMPACTS	ATMOSPHERIC IMPACTS	AESTHETIC IMPACTS	HEALTH/SAFETY IMPACTS	SOCIETAL IMPACTS
Runoff and groundwater pollution from metals-mining	Air pollution from smelting and refining processes	Destruction of scenic areas	Release of heavy metals, sulfur, nitrogen compounds during industrial processes	Dependence of local economies on nonrenewable resources
▲ Acid rain from manufacturing processes	▲ Evaporation of fuels during storage and transfer			
▲ Spills of crude oil or fuel during transport. Gallons of oil spilled in and around U.S. waters between 1970 and 1985: 294,210,000[B]	▲ Air pollution from electricity generation and industrial production			
Disruption of streams during roadbuilding	Dust from roadbuilding	Landscape scarred during construction of highways	Dust inhalation	Disruption of communities
Runoff from fueling operations	Vehicle exhaust (contributes to air pollution and global warming). Percentage of total carbon dioxide emissions in the U.S. that come from automobiles: 31[C]	Ugly freeways	Car crashes	Increased urban sprawl
▲ Acid rain from vehicle exhaust (kills lakes and streams). Tons of nitrogen oxide that cars and trucks emitted in the U.S. in 1985: 7,100,000[B]		▲ Billboard blight. Average number of billboards for every 10 miles of U.S. highway: 14[D]	▲ Photochemical smog (ozone)	▲ Displacement of public transit
		▲ Noise	▲ Chronic low-level exposure to toxins. Number of deaths in the U.S. each year that are related to gasoline and diesel-fuel emissions: 30,000[A]	▲ Traffic gridlock. Hours wasted daily by Los Angeles motorists in traffic jams: 100,000[A]
Sewage plants damaged by some fuels	Fumes from burning of tires and battery cases	Automobile junkyards	CFCs from air-conditioning units (destroy stratospheric ozone, increasing cancer risk)	Site location disputes
		▲ Derelict vehicles		

States, 1988) [C](*World Resources Institute*) [D](Coalition for Scenic Beauty, Washington, D.C.)

Cities to Cars: 'Stay Out!'

Drivers of the world, take note: If you think you can operate a car in any city you please and not pay for anything but gas and parking, think again.

Automobiles entering downtown Singapore during rush hour are required to display a $30-a-month sticker. Cars carrying four or more passengers may pass without charge.

In Hong Kong, electronic sensors on cars price highway travel by time of day, with commute hours the most expensive; drivers are issued a monthly bill.

To encourage pedestrian traffic, officials of Gothenburg, Sweden, have divided the central business district into pie-shaped zones, prohibiting cars from moving directly from one zone to another. Autos move in and out only by way of a peripheral ring road.

In the central sectors of Rome and Florence, Italy, all traffic except buses, taxis, delivery vehicles, and cars belonging to area residents have been banned between 7:30 a.m. and 7:30 p.m.

Mexico City, Athens, Amsterdam, Barcelona, Munich, and Budapest have imposed similar restrictions on commuters.

In Tokyo and other Japanese cities, the buyer of a standard-size vehicle must show evidence that a permanent parking space is available for the car. To comply with the law, some people have taken a novel approach: They've constructed home garages with lifts to permit double-deck parking. ■

MARGARET BOURKE-WHITE, AT THE TIME OF THE LOUISVILLE FLOOD, 1937. LIFE MAGAZINE © TIME, INC.

"What is good for the country is good for General Motors, and what's good for General Motors is good for the country."

General Motors President **Charles Erwin Wilson** to the Senate Armed Forces Committee, 1952. (Wilson became Secretary of Defense the following year.)

WAYNE THIEBAUD, *FREEWAY*, 1979. OIL ON CANVAS. PRIVATE COLLECTION

ROADS TO RUIN

It was, declared Dwight Eisenhower, the greatest peacetime public-works program in history. On June 29, 1956, the president signed legislation that established the Highway Trust Fund, resulting in today's 44,000-mile Interstate Highway System.

That system will be complete in 1991, at which time conservationists hope Congress will abolish the fund. Ike's scheme may have united the nation's cities, they say, but it also scarred mountains, filled wetlands, rechanneled streams, cut towns in half, and forced railroads out of business.

Enough is enough, say members of the Sierra Club's Urban Environment Committee, who believe it's time to revitalize the nation's railroads and reduce people's dependence on cars.

"Our highways are overbuilt," says John Holtzclaw, chair of the Club's transportation subcommittee. "They've squandered resources, undercut the efficiency of our national economy, and led to suburban sprawl."

Holtzclaw believes that the Highway Trust Fund contributes to these problems by favoring highway/auto systems over public transit by more than eight to one. "This country drives up auto mileage by continuing to fund a road system that already consumes two thirds of our oil," he says.

To reverse this trend, Holtzclaw and the Sierra Club propose that federal, state, and local governments force cars to pay their own way. "Gas and auto sales taxes, licensing and registration fees, and toll roads should recoup the full cost to society for roads and autos," Holtzclaw says. "And the nation should start putting money into mass transit—especially rail." ■

EMERYVILLE GOES BERSERKLEY

When many residents of Berkeley, California, opposed the widening of a local stretch of Interstate 80, the protest came as no surprise to California highway planners familiar with the university town's environmental activism.

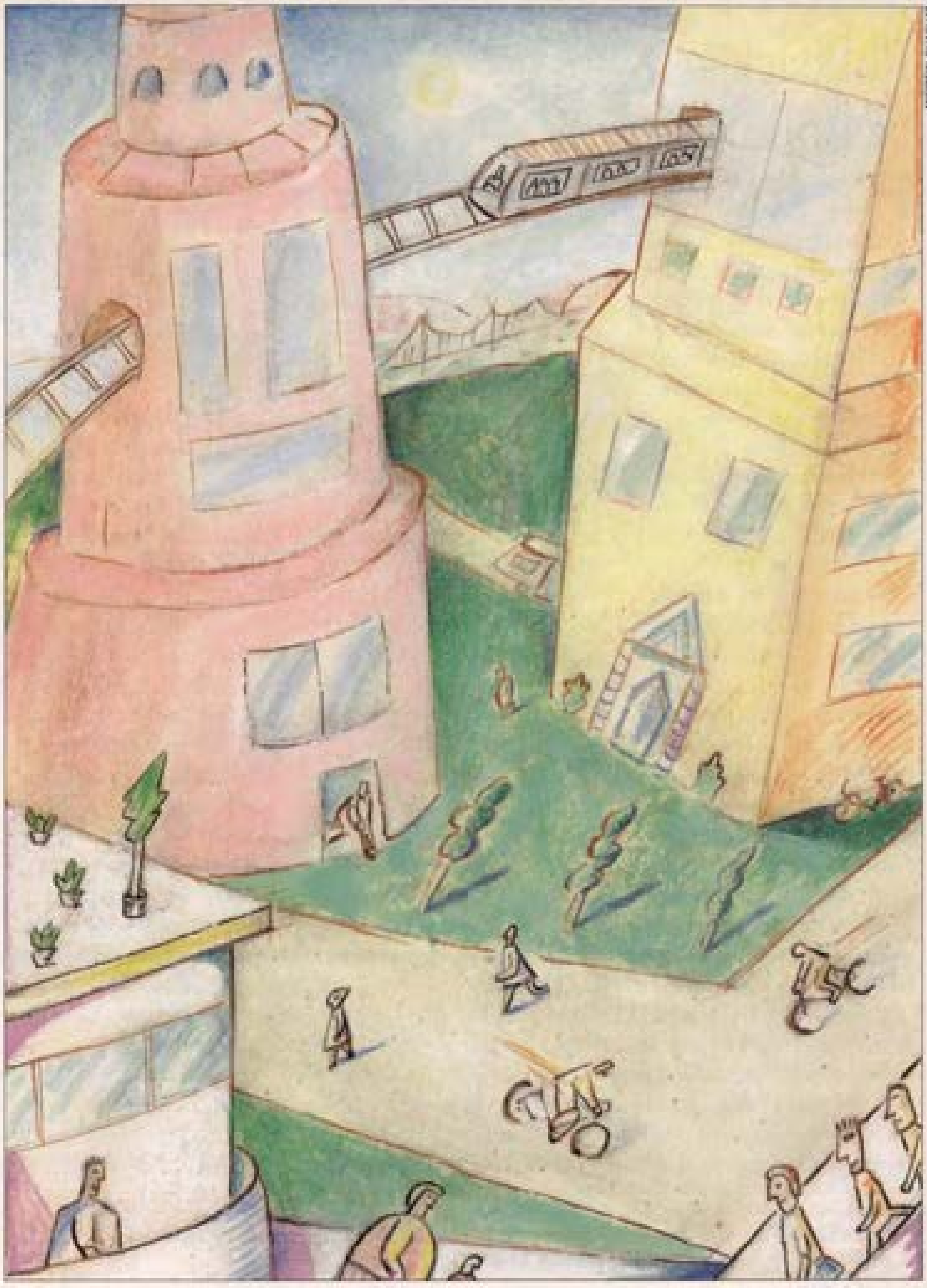
But when Berkeley's more conservative southern neighbor, Emeryville, voted last December to reject the expansion, the state's transit agency, Caltrans, was disappointed. Its plan for four additional lanes appeared to be going nowhere fast.

It was a textbook case of local citizens uniting against a state-proposed freeway expansion.

"It's not just 'crazy Berkeley' doing something," Emeryville city-council member Tom Fox told the *San Francisco Chronicle*.

Both cities fear the increased traffic and pollution that would come with a wider freeway. The Caltrans proposal was intended to alleviate auto congestion, but the agency admits the additional capacity would soon stimulate even more suburban growth. Before long, freeway traffic on I-80 would return to its current crawling pace.

A Berkeley-based environmental group, Urban Ecology, has proposed that the ultimate solution to I-80 crowding involves redesigning the area's neighborhoods and commercial centers so that jobs are closer to people's homes. Keeping I-80 to a tranquil eight lanes, they feel, is a way to begin. ■



GETTING AROUND CARS

As transportation in most cities is structured today, the car is dominant, followed by buses, trains, bikes, and finally shoes. That's precisely the most energy-intensive, least pedestrian-friendly arrangement. What environmentalists around the world would like is to turn the tables: They want to make walking, bicycling, and trolley- and bus-riding fashionable, leaving cars as the transport of last resort.

Rollback– or Rollover?

ANDREW SHACHAT

For a while it was a race, a patriotic display of U.S. drive and ingenuity. As a nation we were going to show our European and Japanese rivals that we could make our cars as fuel-efficient as theirs—maybe even more so. But the race has been called off for now.

Had all gone according to a schedule set by the Environmental Protection Agency in 1975, this year's fleet of U.S. automobiles would have averaged 27.5 miles per gallon of gas used. But in October 1988, Ronald Reagan's transportation secretary, James Burnley, rolled back U.S. automobile fuel-efficiency standards. As a result, this year's auto fleet will fall one mile per gallon short of the original EPA goal.

The effect, according to Amory B. Lovins, director of research at the Rocky Mountain Institute in Colorado, will be a substantial increase in oil consumption. He calculates that rollbacks in the efficiency of the 1986 car and light-truck fleets led to an increase in U.S. crude-oil use of some 295,300 barrels a day—equal to the amount that the Interior Department hopes can be extracted from the Arctic National Wildlife Refuge in one year. (Similar rollbacks have been approved each year since 1986, but data on the consequent oil demand are not yet available.)

Burnley made his decision under pressure from Ford and General Motors. The two industrial giants pleaded, for the fourth year running, that the congressionally mandated fuel standards placed them at a disadvantage in competing with Japanese automakers. They also said the standards would force them to lay off workers.

The undermining of the fuel-efficiency program comes at enormous expense to consumers and to the nation's future energy supply. "It cost manufacturers at most $80 billion to achieve light-vehicle efficiency gains from 1975 to 1987," says Lovins. "But that increased efficiency saved American consumers a cumulative $260 billion in fuel costs."

In the long run, rollbacks may hit more than just people's pocketbooks. In the November/December 1988 issue of *Technology Review*, Deborah L. Bleviss of the International Institute for Energy Conservation wrote that failure to pursue fuel-economy improvements increases the likelihood of a new fuel crisis in the 1990s and adds to the buildup of carbon dioxide that causes global warming. "Clearly," she warns, "neither the United States nor the world at large can afford to neglect making more fuel-efficient light vehicles." ■

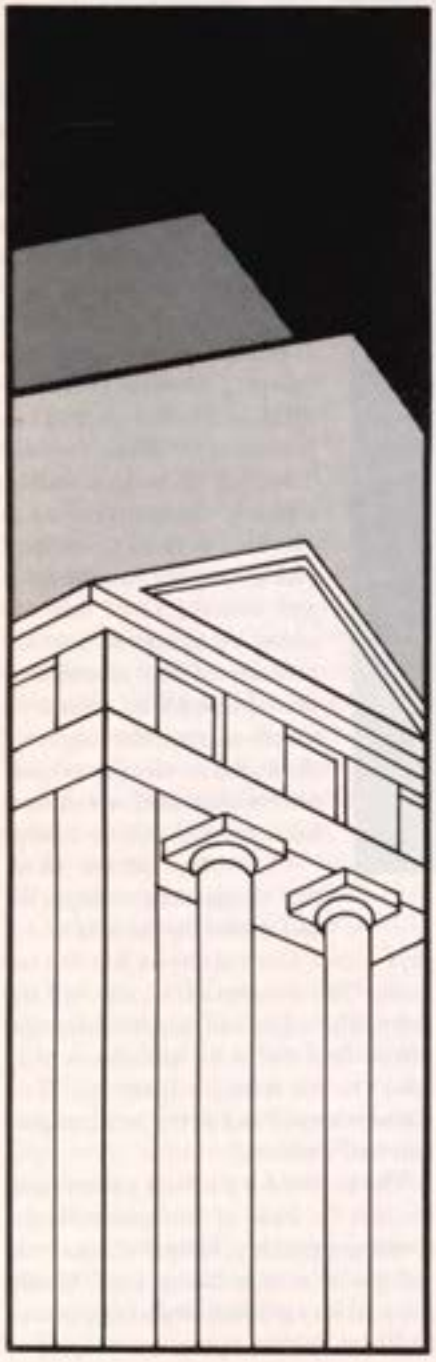
SIERRA CLUB: A DRIVING FORCE

A full 91 percent of Sierra Club households in the United States own (and presumably operate) at least one car, almost precisely matching the nationwide figure for adults of 90.6 percent. In fact, our most recent readership survey shows, more than half of all Club households support two or more gasoline-powered, exhaust-belching vehicles (although some small reduction in pollution levels may result from the tendency of Sierra Club members to purchase relatively fuel-efficient models).

The table below shows which makes of automobiles Club-member households purchase in significant numbers, and how their preferences compare with those of the general U.S. adult population.

Cars Purchased New	Sierra Club households owning 1+ cars	U.S. adults owning 1+ cars	Cars Purchased New	Sierra Club households owning 1+ cars	U.S. adults owning 1+ cars
HONDA	16%	2.8%	SAAB	3%	0.2%
TOYOTA	16%	3.6%	BMW	2%	0.6%
FORD	11%	8.6%	CADILLAC	2%	1.5%
CHEVROLET	8%	11.5%	CHRYSLER	2%	2.3%
VOLKSWAGEN	7%	1.3%	PONTIAC	2%	4.1%
NISSAN/DATSUN	7%	3.4%	OLDSMOBILE	2%	5.1%
DODGE	5%	3.4%	ACURA	1%	0.1%
VOLVO	4%	0.4%	PORSCHE	1%	0.1%
MAZDA	4%	1.1%	AUDI	1%	0.3%
SUBARU	4%	1.1%	MERCEDES BENZ	1%	0.3%
MERCURY	4%	2.4%	PLYMOUTH	1%	2.0%
BUICK	4%	5.1%	Source: *Sierra* Subscriber Profile, 1988 (Mediamark Research, Inc.)		

America's No. 1 Growth Fund Says Environmental Protection Makes Economic Sense!



The Parnassus Fund is America's No. 1 Growth Fund for 1988 according to Lipper Analytical Services. Parnassus is a mutual fund that invests in companies that are sensitive to the environment. We also invest in companies that practice corporate social responsibility --- firms that, for example, treat their employees well, have good equal employment policies and are creative and generous with their charitable contributions. At the same time, we avoid investing in companies that manufacture weapons, produce alcohol or tobacco, are involved with nuclear power or have operations in South Africa.

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PUBLIC LANDS

Finding Funding for Parks

The federal Land and Water Conservation Fund provides money for lots of things—though not necessarily for land and water.

ROB BADGER

Thanks to the Land and Water Conservation Fund, Big Meadow is now public land.

Eric Seaborg

High in California's southern Sierra Nevada is a rich, green meadow surrounded by granite peaks and fringed with conifers. The area, called Big Meadow, is home to 385 plant species—more than can be found anywhere else within the Sequoia National Forest.

Just a year ago the 2,000-plus-acre meadow was privately owned, one of many such choice parcels in the Sierra that had been snatched up by homesteaders in the 1800s. Big Meadow's owner was willing to sell the land to the Forest Service; the problem was finding $2 million to pay for it.

The Sierra Club's Kern-Kaweah Chapter and other environmentalists lobbied members of Congress, who tapped the resources of the Land and Water Conservation Fund (LWCF). "I don't think we could have done it without that fund," says Kern-Kaweah activist Joe Fontaine.

Since its establishment in 1965, the LWCF has helped acquire 5.5 million acres, mostly privately owned lands within the designated boundaries of seashores, lakeshores, critical wildlife habitats, and scenic rivers. Fund grants have also contributed to the development of some 20,000 park facilities, in areas as diverse as Redwood National Park in California, Cuyahoga Valley National Recreation Area in Ohio, Riverfront Park in Little Rock, Arkansas, and Pioneer Courthouse Square in the heart of Portland, Oregon.

But like so many conservation programs, the LWCF suffered under the Reagan administration. While the fund doled out up to $800 million a year in the Carter years, it provided only $200 million a year during the Reagan era—and virtually all of that was added by Congress over the protests of the administration. Meanwhile, federal resource-management agencies continued to identify properties for purchase, which now value more than $2.5 billion.

"Too often people think that designating a protected area means the battle is won," says Sierra Club lobbyist Jim Blomquist. "But designation is only half the story. The other half is purchasing the private land within the boundaries of an area. On that front the Land and Water Conservation Fund is the most important tool we have."

The money for the fund comes from the sale or lease of nonrenewable resources, primarily federal offshore oil and gas or surplus federal land. Ideally this enables a generation that disposes of resources to leave a permanent legacy of

land and parks for future generations.

But while money has fed the fund automatically, the government simply has not spent it on land acquisition. Theoretically it has remained in the LWCF and built up to more than $6 billion, but in reality those revenues have been used to fund other programs. It is unlikely that the $6 billion in "credits" will go toward future land purchases unless budget priorities change.

In spring 1988, Rep. Morris Udall (D-Ariz.) introduced a bill to revitalize the LWCF as the American Heritage Trust. That bill, reintroduced this year as H.R. 876, would incorporate the LWCF and its companion Historic Preservation Fund in a permanent trust. Revenues would continue flowing into the trust at the rate of $900 million a year and would be invested in interest-bearing public-debt securities. The interest would be spent only on land acquisition and park development, appropriated to federal, state, and local agencies, or to nonprofit organizations through government agencies. Any unspent interest would remain in the trust as principal.

The fund would grow until the amount of interest generated each year reached at least $1 billion, Udall said when he introduced the bill. Then the $900-million annual allocation would terminate, and there would be no need for additional government revenues. This process would take about ten years.

A broad coalition of more than 40 groups backs the legislation, including such organizations as the Sierra Club and the Garden Club of America, as well as the National Governors' Association and the Conference of Mayors. At *Sierra*'s press time it had more than 197 cosponsors in the House and 30 in the Senate, where John Chafee (R-R.I.) has introduced an identical bill (S. 370).

Opposing the bill are a consortium of representatives of the livestock, mining, oil and gas, and timber industries, the U.S. Chamber of Commerce, and the National Association of Manufacturers. Objections range from a fear that more government-sponsored land acquisition would infringe on private activities to concerns about allocating so much money for acquisition at a time when the federal budget is tight.

The administration had not yet taken

a position on the bill at press time. During his campaign President Bush said he supported the LWCF, but the budget he sent to Congress in February requested only $200 million for the fund, an increase over Reagan administration requests but not over the amount Congress appropriated the past few years. Interior Secretary Manuel Lujan, Jr., cosponsored the bill last year as a Republican representative, but in confirmation hearings he said he would follow the administration's lead.

The budget deficit may be the weight that tips the balance. Even though funding would come from an outside, nontax source, the trust would still limit what has unintentionally become a source of general revenues. That fact has lost the fund a few friends.

"I'd favor the Udall bill under ordinary circumstances, but I object to the establishment of the fund as an entitlement at the expense of other budget needs," says Rep. Sidney Yates (D-Ill.), a longtime LWCF supporter and chair of an important Appropriations subcommittee. "The Reagan administration has committed us to defense-spending programs that will in the future continue to soak up too much of the budget. To set aside money for this is unfair to other priorities."

But to say that the bill creates an entitlement is to mischaracterize it, says Udall, who has put the fund at the top of his agenda this year. "We are establishing a priority, a road map to get us back to where we were ten years ago. I don't think that's unreasonable; Congress will still control this spending. For eight years, more than 75 percent of the money earmarked for the Land and Water Conservation Fund has been spent instead on the Reagan defense buildup and other programs. That's wrong. That's unfair. I think the American people are ready to correct this inequity, to reorder our budget priorities, and to live up to the commitment Congress has made to future generations of Americans to protect our natural heritage."

ROB SAUBER

Congress has passed legislation to add 7,000 acres to South Carolina's Congaree Swamp National Monument. The proposed American Heritage Trust could fund the purchase.

ERIC SEABORG *is a Washington, D.C., freelance writer and former president of the American Hiking Society.*

RESOURCE DEVELOPMENT

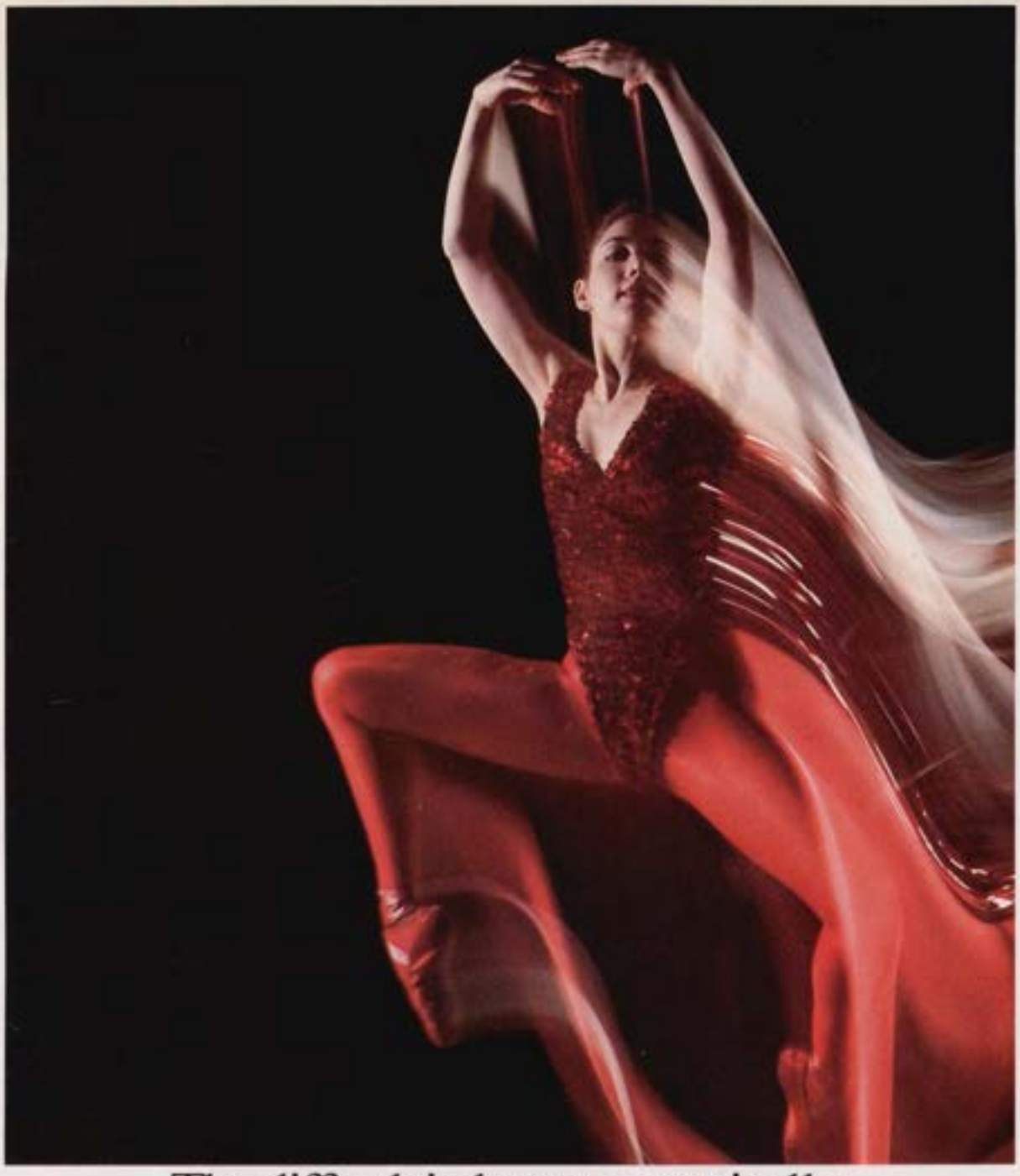
Beating the Drum for Caribou

Their culture imperiled by oil development, the Gwich'in people gathered to dance, organize, and get their message out.

Martha Peale

IT'S TWO WEEKS BEFORE the 1988 summer solstice in a village a hundred miles north of the Arctic Circle. The land is hot and dry and still. A silty river flows silently between the settlement and the edge of the Arctic National Wildlife Refuge to the north.

At 2 a.m., in a meeting house above the river, shafts of orange sunlight pierce the dust raised by the feet of Native dancers. These people have come from 19 villages on both sides of the Alaska-Canada border. In plastic shopping bags they've brought their dancing slippers made of caribou skin and beaded with



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the designs of fireweed and other tundra flowers. It's a time of ceremony and celebration for the Gwich'in people. Some of them will wear holes in the soles of their soft shoes before the dancing ends.

The gathering has a solemn purpose. The chiefs of Arctic Village have called the Gwich'in tribes together for the first time in a hundred years because, in their words, "the very future of our people is endangered" by proposed oil-and-gas exploration and development on the coastal plain to the north.

The Gwich'in villages are separated from the center of controversy by as much as 250 miles and the massive Brooks Range. But they are intimately connected to the place by the migratory Porcupine caribou herd, which winters in the interior with the Gwich'in but calves on the sanctuary's north coast—precisely where industrial development might occur.

While wildlife biologists study the behavior, density, and movements of the caribou population, and environmentalists assert that the herd reflects the fitness of the entire Arctic ecosystem, the Gwich'in tribes address a more personal issue: Their subsistence culture depends on the vitality of the Porcupine caribou herd.

The Gwich'in vocabulary for "caribou" is as extensive as the Eskimos' for "snow." Adeline Raboff, an Arctic Village resident, spells a few of the possibilities. *Na lee* is meat, *nalee ghaii*, dried meat. *Cha thaii* is the live animal described as a source of food, *cha gee*, an unborn calf. *Ha da tsun* is a yearling that stays beside a mother and a newborn, *che yaa t'ok*, a nursing mother. *Da zhoo tsoo* is a young, foolish male; *hin tsun* or *haiin tsu*, a bull in fall rut; and *haii k'ee lik*, a bull that keeps its antlers all winter long.

Caribou is the Gwich'in's primary staple, supplemented by fish, migratory waterfowl, and beaver. These foods are roasted over open wood-fires throughout the three-day gathering. The Gwich'in earn money by trapping and from seasonal work such as firefighting, not only to buy groceries in a place where a dozen eggs sells for $2.44, but also to purchase gasoline, rifles, and outboard motors—goods that enable them to pursue a contemporary version of the lives their parents and elders passed on to them.

"Our lives are threatened by the proposed development," Norma Cassie from Old Crow in Canada's Yukon tells Alaska Governor Steve Cowper. Cowper is at the gathering to assure the Gwich'in that the state opposes development in the refuge's core calving area—but that doesn't satisfy Cassie. "If you develop a very little bit of that land, you will spoil a lot of it," she says. "You speak of national security. But that oil will not last for a long time. The caribou will last a lot longer. We want to preserve the caribou. We want to live for a long, long time."

The assembled Gwich'in chiefs sign a resolution that states in part: "For thousands of years our ancestors, the Gwich'in Athabascan Indians of northeast Alaska and northwest Canada, have relied on caribou for subsistence, and [we] continue today to subsist on the Porcupine caribou herd, which is essential to meet the nutritional, cultural, and spiritual needs of our people." Urging protection of this herd and the Gwich'in

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Traditional dances—and concern for the caribou—bring the Gwich'in people together.

way of life, the chiefs ask that the United States government prohibit development of the calving and post-calving grounds of the herd and designate the entire coastal plain of the Arctic Refuge a wilderness area. "The elders are of one mind on this," says the chief of a Gwich'in village in the Northwest Territories.

The leaders have also gathered to select representatives to carry their words to Washington. Sarah James of Arctic Village has been to Capitol Hill. When she first arrived in the Lower 48, the message she heard again and again was that Alaska Natives want oil-and-gas development. She would then try to explain the Gwich'in perspective. "Even so," she says, "there was room for people to say, 'That was just Sarah speaking for herself.' The whole Gwich'in coming together solves that problem. It's not just Sarah. It's the whole Gwich'in."

"Thumbs up for development" is the well-publicized slogan of the Inupiat Eskimo Native corporations that own potentially oil-rich land on the North Slope. Other Alaska Native corporations have queued up to trade inholdings and development rights in other refuges for potential oil lands in the wildlife refuge. Joining them are the North Slope Borough, which has an appetite for oil-and-gas revenue, and some of the Inupiat people, who fear that health-care and education programs in their villages will disappear unless refuge lands are developed.

On the Arctic coast, bowhead whales are to the Inupiat what caribou are to the landlocked Gwich'in. Exploration and development of the coastal shelf are what concern them; development of the land is not something most Inupiat want, but it's something most feel they cannot afford to oppose.

In the final night of ceremonial dancing, Jonathan Solomon, first chief of Fort Yukon, gives a flat, hand-held drum to Isaac Akootchook, an Inupiat from Kaktovik, at the edge of the Beaufort Sea. His is the only village on the coastal plain, and one that stands to profit from oil-and-gas development. He has come to tell the Gwich'in that some Inupiat do not want development in the core calving area.

Akootchook accepts the drum from the Gwich'in chief, and briefly explains that no dancers have come from his village. He begins, and within a few measures his daughter rises, faces him, and begins to dance. Her arms, shoulders, and back move in waves while her knees absorb the rhythm of the drumbeats. She dances alone until another young woman, a Gwich'in, gets up and follows. Then other Gwich'in rise. They

Walk through places like these and the child in you runs free. Rocky Mountain sheep ahead, eagles above and whales just off in the distance. Suddenly you're all eyes and ears. You notice Vancouver has a countryside that rivals wilderness parks. Further afield you find yourself on a turquoise lake with only the sound of your paddle echoing off the shore. It's a picnic to find out more. Just call **1-800-663-6000** for our travel kit. Tourism British Columbia, Parliament Buildings, Victoria, B.C. V8V 1X4.

Bill Reid, Minister, Tourism and Provincial Secretary

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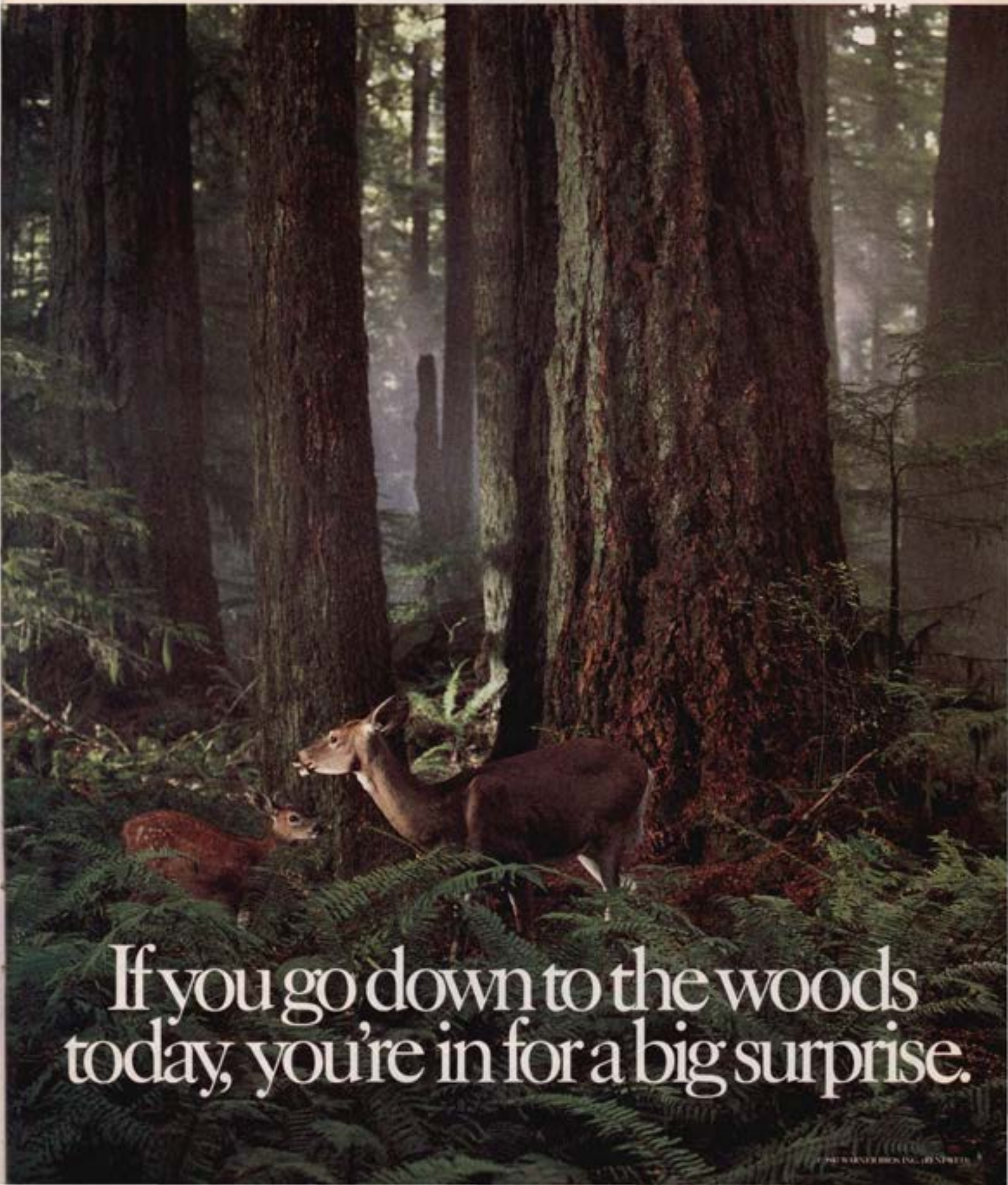


stream to the floor to be dancers for the Inupiat. As people from the south side of the mountains dance to the songs of the north, they share the goodwill and sense of promise that has developed over the course of the meetings.

Lincoln Tritt, first chief of Arctic Village, explains why the threat of loss has culminated in a celebration. "The caribou has given the people our identity," he says. "It's given us our pride. It's given us our values. We have shown that the Gwich'in can speak up."

MARTHA PEALE *is a freelance writer in Fairbanks, Alaska.*

CLEAN WATER

A Chemical War on Water

From Colorado to British Columbia, poisoning lakes to control pests has become a common summer ritual.

Gary Payne

MINNESOTA's Coon Lake was calm. From his vantage point in a small boat, angler Dan Gesino could see the outlines of several bluegill spawning beds, closely guarded by their creators. Suddenly, a commercial weed-control vessel made a pass along the nearby shoreline. In the shadows beneath the boat, curved pipes were venting a chemical weed-killer.

Seconds after the boat left the area, Gesino noticed the fish begin to quiver and convulse. Moments later they were darting frantically in mad circles. Soon Gesino's boat was surrounded by 200 bluegill gasping on the surface of the water.

"It was a nightmare," he recalls. "The whole fish population in that area was wasted, right in front of me."

Fish kills caused by routine applications of aquatic pesticides are not unusual in Minnesota lakes. Including the Coon Lake incident, which occurred in 1986, the Minnesota Department of Natural Resources has confirmed three pesticide-related fish kills in as many years. The MDNR attributed none of the three episodes to *misuse* of pesticides, so it took no action against the operators responsible.

Nor is Minnesota's experience unique. In fact, state and federal agencies have been dumping chemicals into lakes and streams since World War II in a parade of well-intentioned experiments that have continually run amok.

One of the more notable early experiments involved toxaphene, a deadly mixture of more than 100 separate chlorinated compounds. "Toxaphene is such a carcinogen, it boggles the mind," says former National Cancer Institute toxicologist Melvin Reuber. Until it was banned in 1987, toxaphene was generally used as an insecticide on cotton. Ambitious fishery managers found it worked effectively as a fish-killer, too, and used it to destroy undesirable species in lakes, restocking later with game fish.

But toxaphene worked a little too well. It remained potent even after it had settled into lake sediments, and was stirred up by wave action. Its reappearance was particularly hard on large predator fish, which tend to concentrate poisons accumulated by organisms lower on the food chain. Ironically, these predators were the very fish whose survival was the original goal of most restocking plans. In 1983 the International Joint Commission on the Great Lakes reported that toxaphene had created "more than several restocking disasters. . . . Some lakes could not be successfully restocked for up to five years."

Another experiment involved using the herbicide 2,4-D to control Eurasian milfoil weed in the lake system managed by the Tennessee Valley Authority in six southeastern states. In the best tradition of the "if some is good, more is better" school of thinking, TVA officials in 1962 began blanket applications of 20 to 40 pounds of 2,4-D per acre. By 1973 some 1.4 million pounds of 2,4-D had reduced the weed's range from 25,000 to 5,000 acres. But three years later, TVA officials admitted that milfoil had reclaimed three quarters of the range despite yearly bombardments.

Because aquatic plants quickly be-

come tolerant of herbicides, larger doses of poison are needed each year to keep unwanted growth under control. Furthermore, the dead vegetation releases nutrients that often trigger increased algae growth. The solution? In a chain of events that only a pesticide manufacturer could love, algicides are brought to the rescue.

"It's a classic pesticide addiction," notes aquatic biologist Bonnie Alexander, who struggled through five stormy years in the early '80s as an MDNR aquatic-pesticide enforcement specialist. "Weed and algae control have become the bread and butter of the aquatic-pesticide industry."

When Alexander was hired, she had hoped that the agency would severely restrict pesticide use in Minnesota's 10,000 lakes. To her dismay, the number of aquatic acres chemically treated under MDNR permits tripled between 1980 and 1985, and yearly pesticide dosages in some lakes exceeded three tons. Only two full-time MDNR enforcement officers were expected to police several hundred aquatic-pesticide applications. In recent years one of those two positions has often been left vacant, and a single individual tries to enforce the state's entire program.

If such thin staffing makes it difficult to control permit holders, it makes it nearly impossible to address what may be an even more significant problem. All across the United States, pesticide distributors are mailing sales brochures to lakeshore owners, who in turn purchase pesticides by mail. Because the pesticide industry is not legally bound to determine if a purchaser has a state permit to apply the poisons, these sales can lead to uncontrolled activity.

"A tremendous amount of illegal usage is occurring," Alexander told her MDNR superiors in a memo recommending legislation that would require a purchaser to show proof of permit. The agency's inertia on this and other pesticide problems finally prompted Alexander to resign in 1985. But the startling figures she obtained from MDNR reports on aquatic-herbicide sales in Minnesota were published in the *Minneapolis Tribune*. The reports indicated that 323 pounds of aquatic-label 2,4-D had been approved for use in Minnesota in 1982,

but that about 74 times that amount—24,030 pounds—had been sold in the state in the same year.

Embarrassed by the publicity, MDNR Control and Monitoring Unit Supervisor Howard Krosch pointed out that just because the herbicide was sold in Minnesota, one could not assume that it was actually *used* in Minnesota. Meanwhile, the herbicide industry continued to thrive. By 1984 aquatic 2,4-D sales in Minnesota had outrun permitted use by a factor of 300. More current sales figures are not available, according to Krosch, because manufacturers are now reluctant to share their records with the department.

A brighter chapter in the history of aquatic-herbicide use was written in British Columbia in 1978, after the Ministry of Environment declared an "all-out attack" on milfoil weed in the Okanagan Basin lake system. The waters of Okanagan had already been subject to four years of experiments with herbicides such as paraquat, diquat, and 2,4-D. The specter of a TVA-style crusade against the lakes jolted a handful of individuals into organizing the South Okanagan Environmental Coalition.

At the outset, the coalition fully intended to carry out its protest peacefully. It began by testifying against the plan at government hearings. But while the hearings were still in progress, the Water Investigations Branch (WIB) of the ministry announced that the poisoning was about to begin, with a major 2,4-D application near the town of Kelowna. While the coalition scrambled to obtain a court injunction against the application, the WIB decided to go ahead, despite forecasts of bad weather that could sweep much of the herbicide away from its target.

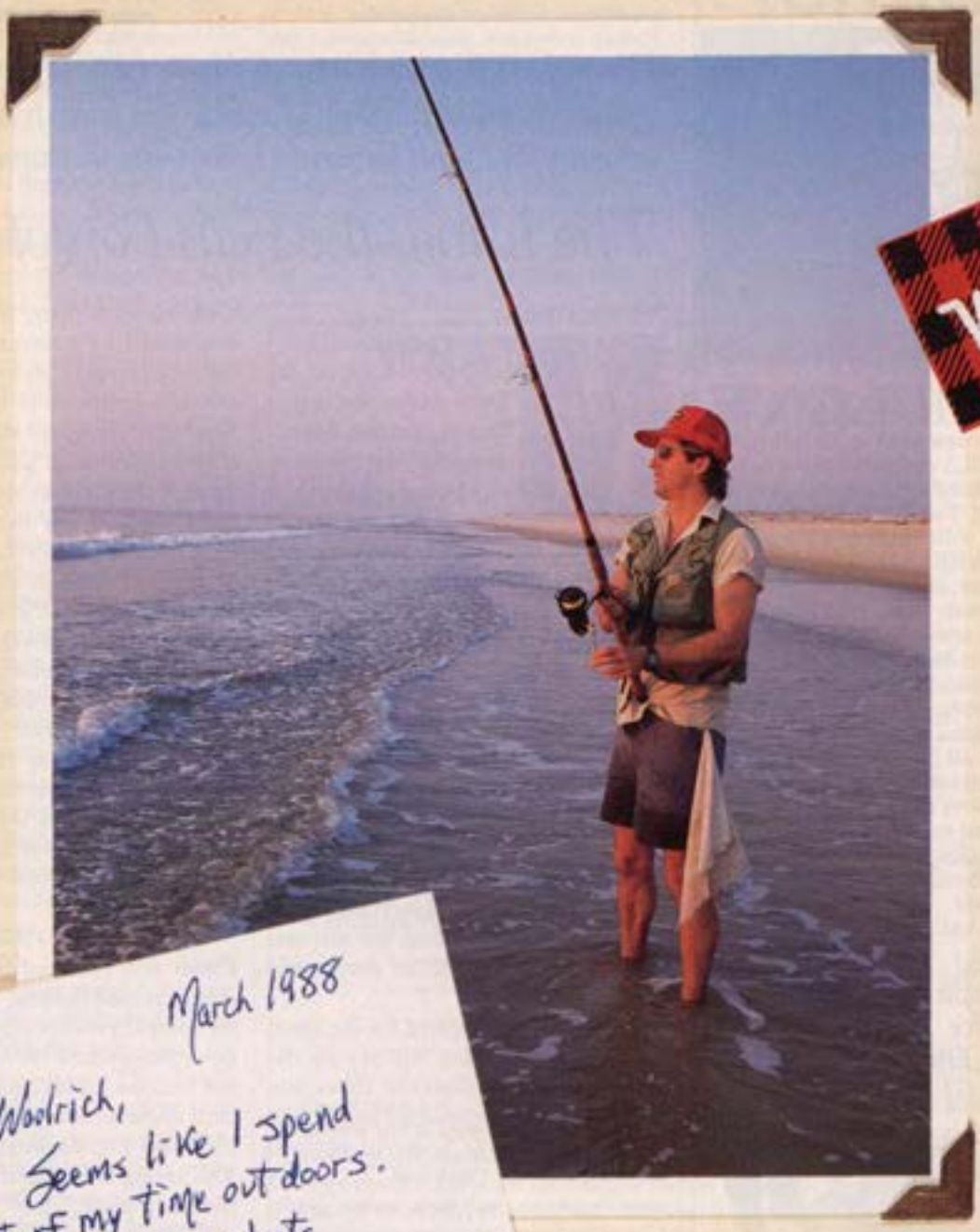
The government's boats were met by a small navy of canoes paddled by Kelowna residents. As the Royal Canadian Mounted Police were called in to arrest the protesters, more canoes arrived. The WIB countered by spraying a protester and ramming a canoe, overturning it and dumping its occupants into the treated water.

Meanwhile, the injunction arrived and the canoeists returned to shore victorious. Later, with the support of 45 other British Columbia organizations, the coalition eventually stopped 90 percent of the applications the ministry had proposed.

But the Okanagan activists' success story is an exception. Only last summer the Colorado Division of Wildlife killed every trout in a 21-mile stretch of the Arkansas River in an attempt to eliminate carp and suckers in Clear Creek Reservoir. The plan backfired when the agency released rotenone-treated water from the reservoir prematurely. The death toll downstream was more than 40,000 fish.

In Colorado, Minnesota, and elsewhere, complex aquatic ecosystems are being used as chemical field-testing laboratories. Agencies appear unlikely to change their programs voluntarily. It may finally take grassroots efforts, a joining together of lakeside neighbors and conservation-minded groups, to end this war on water. ■

GARY PAYNE, *a college instructor in Brainerd, Minnesota, has published articles in* Harrowsmith, New York Afield, *and* Minnesota Sportsman.



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NATIVE LANDS

The nation's first environmental laws failed to provide for Indian reservations. Now Congress has given tribes clear authority, but scant resources, to begin their cleanups.

The Lands the Feds Forgot

Marjane Ambler

Most of the nation's Indian reservations are far from major industrial centers, but that doesn't mean they are free from environmental problems. On the Oneida Reservation in Wisconsin, fumes from nearby paper plants foul the air. On Mille Lacs in Minnesota, fish kills occur regularly. On Pine Ridge in South Dakota, the drinking water stinks. On Chehalis in Washington, wastes from a septic system ooze onto a nearby playground.

"On almost every Indian reservation that I've visited, I've seen environmental conditions that most people would find unacceptable," says Warner Reeser, a consultant hired by a national Indian organization to study pollution on 55 reservations. The problems are serious, Reeser says, and the tribes desperately want to solve them.

Reeser's study, prepared for the Environmental Protection Agency by the Council of Energy Resource Tribes, and other studies commissioned by the EPA suggest that the U.S. environmental revolution of the 1960s and '70s is only now beginning to reach Indian lands. Congress forgot the reservations when it passed the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, and the Solid Waste Disposal Act. Most environmental laws of that era did not even mention Indian lands, much less say who should be responsible for them. Federal legislators naively assumed that states could enforce air, water, and hazardous-waste regulations from sea to shining sea, even though states have no jurisdiction over the nation's 304 Indian reservations.

So for years many reservations were overlooked by government regulators. Fishing streams and even drinking-water supplies were not monitored. Midnight dumpers tossed unwanted chemical drums on Indian lands. Reservations throughout the country were becoming polluters' havens.

For example: In 1977, on the Spokane Tribe's reservation in Washington, a Bureau of Indian Affairs geologist discovered canary-yellow radioactive waste flowing from a uranium mine into Blue Creek in the Columbia River drainage. The BIA subsequently ordered Dawn Mining Company to dam the toxic discharge, but that proved to be only a temporary solution. Waste continued to pour into the drainage, and by 1988 Blue Creek's 13,000 rainbow trout had all but disappeared.

Under the Clean Water Act of 1972, Dawn was required to obtain a discharge permit limiting its releases. But the company continued to operate without a permit until 1987. "Had the mine not been on Indian lands, it might well have come to someone's attention earlier," says EPA engineer Grover Partee. This spring Dawn finally built a water-treatment plant.

When states saw pollution coming their way from reservations like the Spokane, some tried to fill the regulatory vacuum. But that brought only resentment from tribes that had been battling state officials for years over sovereignty issues. Tribes suspected that state officials had money as well as pollution on their minds: The higher a state's land-area figures, the greater its funding from the EPA.

By the early '80s the EPA realized that its regulatory programs weren't reach-

ing the reservations. In November 1984 the agency recognized the tribes' authority to set up their own environmental programs to keep the reservations at least as clean as federal standards require. A year later, after the state of Washington challenged the EPA's right to regulate hazardous wastes on a reservation in the state, the Ninth Circuit Court of Appeals reaffirmed the EPA policy, saying that Washington lacked authority on Indian lands.

The agency policy and the court decision formed two legs of the still-unstable foundation for reforming environmental regulation on Indian lands. Next, in 1986, the tribes went to Congress with proposed legislative amendments in hand. They expressed dismay about conditions on many reservations, arguing that states often contributed to the deterioration of their lands. New Mexico, for example, had lowered water standards to allow the city of Grants to build a sewage-treatment plant upstream from the Acoma Pueblo, over strong objections from Pueblo Governor Merle Garcia.

Despite opposition from some states, Congress added Indian-backed provisions to the Clean Water Act, the Safe Drinking Water Act, and the Superfund (which regulates hazardous-waste cleanup at abandoned sites) that same year. Through the amendments, Congress made it clear that tribes had the same authority as states: They could make pollution-control contracts with the EPA, adopt their own water standards and regulations (at least as stringent as the federal government's), and play a larger role in federal hazardous-waste decisions.

Today Indian environmental officials have the backing of all three branches of the federal government. An EPA policy, a court ruling, and new laws support their efforts to regulate pollution on their lands. But as the tribes begin cleanup work, they still face tremendous problems. Their newfound authority has unfortunately come at a time when Congress is looking for ways to cut costs. Most tribes need just as much help as states received when the nation's environmental laws were first passed, yet their concerns have been losing out to those about the federal deficit.

Some tribes—such as the Navajo, Wisconsin Oneida, and Minnesota Chippewa—have well-established environmental departments that are staffed with a variety of technical experts. Others, such as the Spokane Tribe, have no environmental staff at all, and the EPA has turned down their initial requests for program grants.

"The EPA has suddenly started sending tons of paper to tribes. Some of them don't have the staff to sift through it," says Gail Chehak of the National Congress of American Indians. Many tribes have turned to outsiders—attorneys, consultants, and environmental

and national tribal organizations—to help them plan programs and write environmental codes.

The Sierra Club's Native American Sites Committee is working with Indian groups to assemble health and pollution data that can be used to press for cleanup of certain key sites. On the Pine Ridge Reservation in South Dakota, for example, Club activist Julie Andersen is helping compile information about health problems that may be related to polluted drinking water. "If the situation warrants it," Andersen says, "we will work with the Sioux to get old mine tailings cleaned up and a water-treatment plant built."

As the tribes struggle to cope with their new responsibilities, the EPA is having startup troubles of its own. "The EPA has not met any of the statutory deadlines for issuing regulations for the Clean Water and Safe Drinking Water acts' amendments, so funding has not been available," says attorney Kevin Gover, a Pawnee-Comanche who is helping prepare planning grants for several tribes. Gover also criticizes the EPA for not pushing Congress to pass Indian amendments to other environmental statutes.

Part of the problem is sheer numbers: Suddenly the agency has to deal with 304 tribal as well as 50 state governments, without additional money from Congress. To address problems on the reservations, the EPA must redirect resources from existing programs, resulting in competition between states and tribes. "I am confident the money will come as the tribes establish a track record," says Anne Norton Miller of the EPA's Office of Federal Activities. For now, though, the agency is funding only a few proposals. Says Miller, "It's better to fund 10 good programs than 50 that don't go forward."

Many tribal advocates are impatient with this piecemeal approach. The Sierra Club's Andersen is particularly concerned about the reservations' abandoned hazardous-waste sites, which were not systematically surveyed in the nation's Superfund inventory. In 1986

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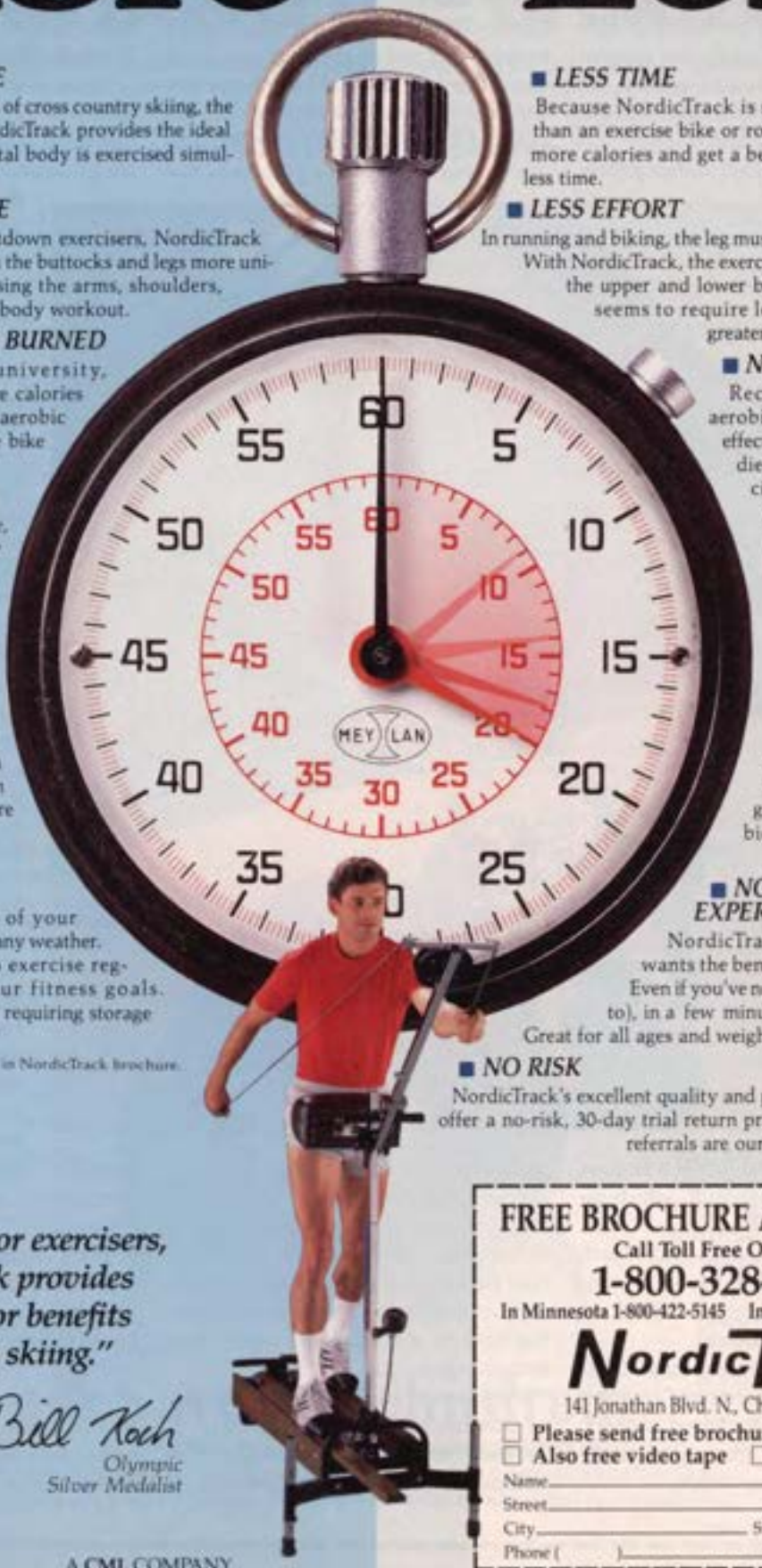

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Congress requested a study to determine whether these sites posed dangers. The EPA responded by handing lawmakers an old tribal study that covered only 25 reservations. The agency left decisions about more thorough study to each of its ten regional directors.

The three directors who subsequently conducted surveys unearthed serious problems. In EPA Region 8, which includes Colorado, Wyoming, Utah, Montana, South Dakota, and North Dakota, EPA researchers found six contaminated sites that required (and received) emergency removal.

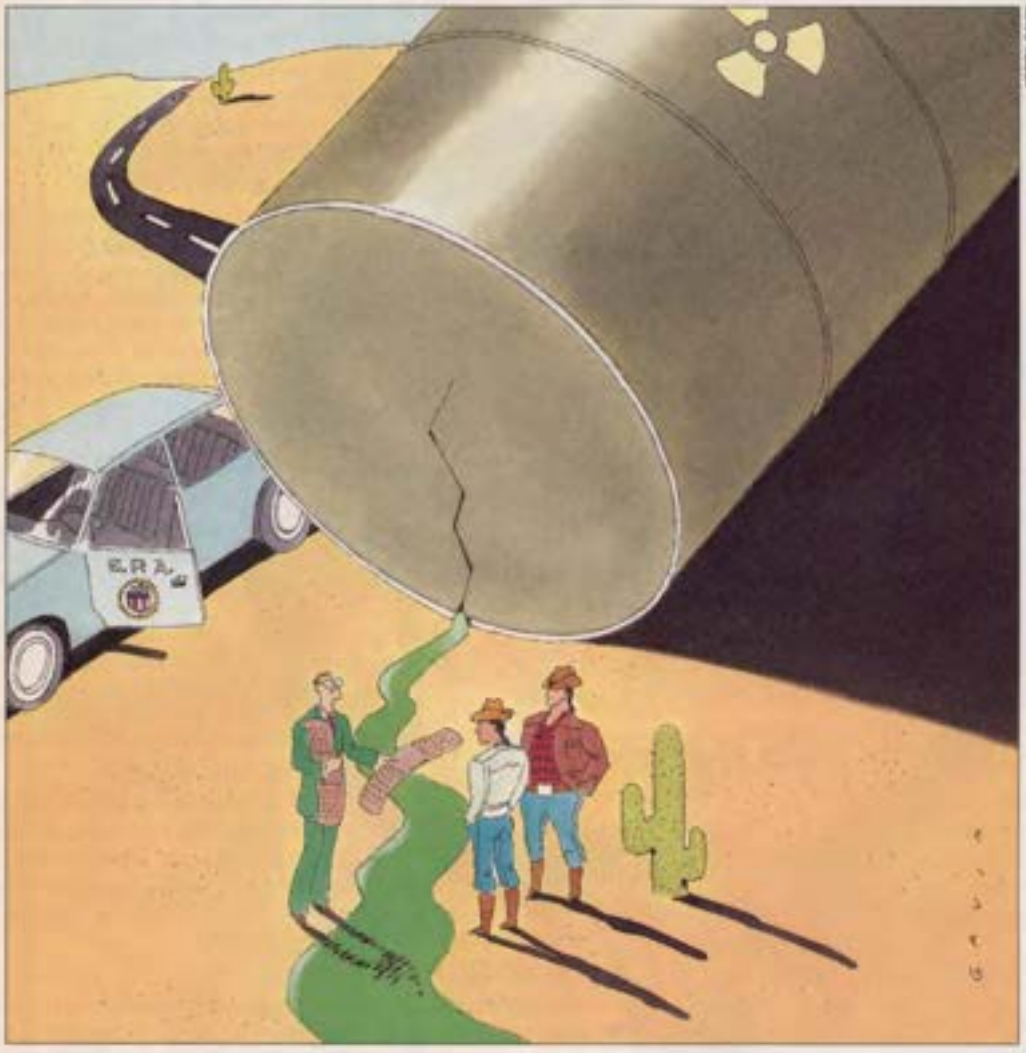
By not requiring surveys in all of its regions, the EPA is practicing "environmental apartheid," Andersen charges, "affording one race fewer protections than the rest of the population."

Margaret Anthony of the EPA's Hazardous Site Control Division says no discrimination is intended. The agency believes that reservations are less likely than other U.S. lands to have Superfund sites, she says, and that the most heavily polluted sites have already been listed by states concerned about pollution that spills over reservation borders.

Moreover, Anthony says, the EPA is trying to train states and tribes alike to identify their own sites. The agency has held three regional workshops for tribes and has distributed a brochure explaining how to recognize and report hazardous waste.

Andersen is infuriated by the brevity of this list of accomplishments. "A brochure would not be considered an adequate response for Love Canal residents," she says. "Nor would an informative workshop be considered much of an answer for the people of Times Beach."

Meanwhile, tribes are sorting out their priorities. Some are organizing an intertribal lobbying effort to seek more congressional support for their environmental programs. Some are working cooperatively with states. All are taking a hard look at their problems and their capabilities, often concluding that they cannot realistically seek primacy in every environmental program. Even casual examination of the EPA's lengthy funding applications forces most tribes to go beyond sovereignty rhetoric to decide which programs they really want to administrate and which would be best left to the EPA.



KERRY DAVIS

Many tribes face tough choices. Environmental programs provide long-term rather than immediate benefits. With unemployment rates as high as 73 percent, some tribes must put most of their effort into getting food on the table.

Even so, tribes "should recognize the importance of land and water," says Louise Linkin of the Navajo Environmental Protection Administration. While acknowledging that her tribe has more financial resources than many others, Linkin insists that the environment should be a high priority for Indians. "The tribes must take the primary initiative," she says. "Federal assistance is needed, but only a tribe can implement a major regulatory effort to have a cleaner environment." ■

MARJANE AMBLER *has recently completed a book on Indian energy development, which will be published by the University Press of Kansas early next year.*

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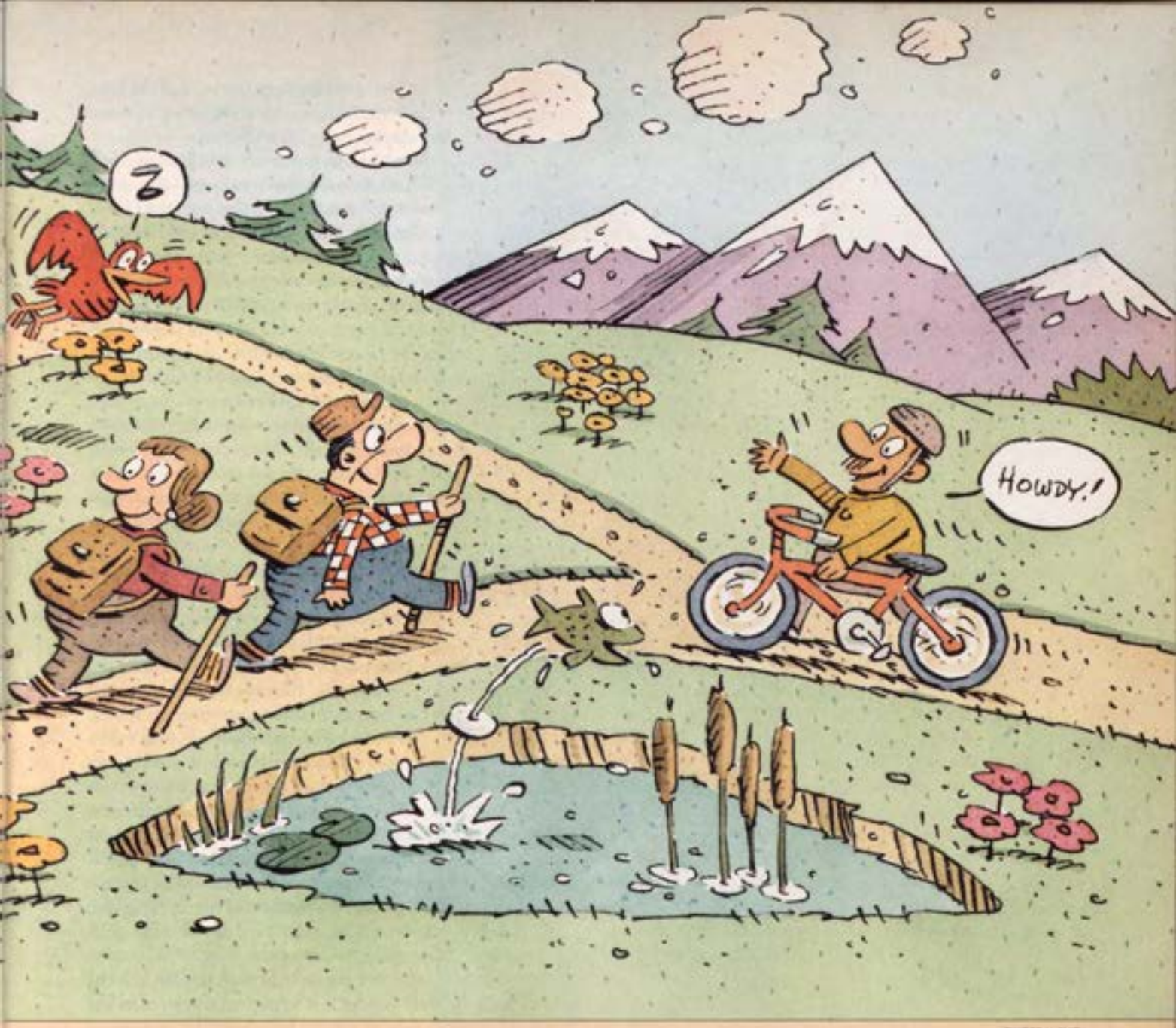
Vicious Cycles?

Some view mountain bicyclists as a new breed of nature lover, while others think they're outlaws. Which side you come down on may depend on how much dust you've eaten.



ELWOOD H. SMITH

By Dennis Coello

An armed ranger crouches in ambush where the narrow hiking path intersects a paved road. His prey, first spotted by a park-district helicopter patrol, sprints unwittingly around the last bend and directly into the trap—where a stern glare, a lecture, and a $230 fine await him.

Another poacher or marijuana grower caught red-handed on public land? No: a bicyclist out for an early-morning ride on a trail where cycling is prohibited. This is an area in the East Bay Regional Park District (EBRPD), which includes about 12,000 acres of nearly contiguous parkland bordering Oakland, California. It's an "urban wilderness" for hikers, joggers, equestrians, and, more recently, mountain bicyclists.

When the two-wheelers began rolling onto the trails en masse almost ten years ago, they stirred up a storm of controversy that has yet to settle. Quiet trails that had known only boots and hooves were for the first time imprinted with the tire tracks of all-terrain bicycles (ATBs), whose wide knobby tires, heavy-duty 15-speed gearing, and stout frames give riders speed and mountain-goat maneuverability on steep and narrow tracks. The bikes proved tremendously popular: More than 5 million have been sold since mass-produced models hit the stores in the early 1980s.

Many hikers and equestrians eyed the new kids on the block with disdain for invading *their* backcountry. On a less philosophical level, the slower-paced trail users feared getting

plastered against a tree as a bike careened around a blind curve on a narrow trail, or passed without warning at high speed on a straightaway. When these problems were added to the damage that wheeled traffic can cause to a natural setting, mountain biking's opponents dug in their Vibram soles.

Their intensity was matched only by that of certain vocal riders—holy rollers who demanded unlimited access to all public lands, including designated wilderness areas. Their claim: Bicycles cause less trail damage than horses, which are ubiquitous in many backcountry areas. Motorists had told cyclists for generations that bicycles don't belong on roads; now hikers seemed to be saying that they don't belong off them.

But after a decade the theme of coexistence is being suggested by cooler heads in both camps. Some mountain-bike organizations are cooperating with land managers to ease the impact on trails. Conservation organizations, especially the Sierra Club, have tempered their opposition to the bikes.

If you hike, you may perceive bicycling on public lands as half-permitted; if you ride, you may see it as half-prohibited. Mountain bikes are banned from trails in all national and most state parks and monuments, and they're partially or completely forbidden in an increasing number of city, county, and regional parks. They are allowed on the majority of national-forest and Bureau of Land Management roads and trails, except those in wilderness and primitive areas and on a few specially marked trails. Of the 100,000 trail miles in national forests, approximately 68,000 are open to bicycles.

A noncyclist might wonder why riders are upset, given their legal access to the preponderance of nonwilderness land. Some mountain bikers respond that theirs is a continuing battle against overblown charges of damage to the environment and danger to hikers. They contend that studies show minimal erosion and human conflict when bicycles are allowed on trails. Yet the Sierra Club, perhaps mountain bicycling's most vocal opponent, continues to lobby for stiff regulations. The result is that an increasing number of nonfederal parks near urban areas are banning ATBs; federal public lands are considering similar regulations; and the total acreage of public land open to bicycles is shrinking as more areas in the country are designated as wilderness.

Cyclists claim that the trails prone to soil damage don't appeal to them. "What kills me is that mountain bikes don't work in soft soils anyway," says Steve Howe, editor of Utah's *Sports Guide* magazine. "Don't worry about the occasional mountain biker who wanders a hundred yards off the road before he realizes it's just not the way to go. If you're really worried about soil damage, get livestock off."

Rachel McDonald, supervisor of 2,300-acre Tilden Regional Park (one of the largest in the EBRPD system), says, however, that environmental and social disturbances due to mountain bikes are undeniable. "Problems come about when riders are on trails where they don't belong," she says. "They're interesting trails, narrow and steep and fun to ride, but the damage is obvious: ruts, which channel the water. And on fire roads where biking is legal we sometimes get very fast riding, which is dangerous because none of the roads are straight."

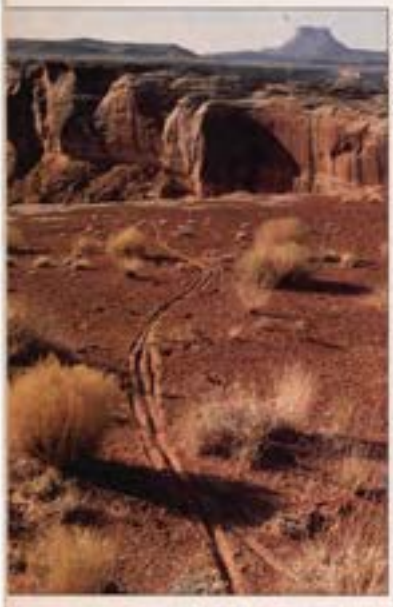
As for horses, which have had access to these parks for years, McDonald finds little comparison. "Something I see all over our bike and other trails, and one thing equestrians almost never do," she says, "is make new trails. Beyond the ruts and switchback crosscuts, the problem is new trails. 'It's faster to the parking lot this way,' they say, and off they go."

When bicyclists first started modifying street cycles for use on the trails and fire roads of Northern California's Mt. Tamalpais nearly 15 years ago, part of the thrill was the cat-and-mouse game riders played with the state-park and water-district rangers there. Today bikes are prohibited from footpaths and the area has a 15-mile-per-hour speed limit (5 miles per hour on blind curves and when passing walkers), a volunteer bicycle patrol, and radar-toting rangers. Across San Francisco Bay in Berkeley, members of one cycling club teach trail etiquette to fellow riders and work with park administrators to minimize trail conflicts.

Yet the sport's renegade image is hard to shake. In the same city another, slightly less public group educates its riders about the "best" times to ride on prohibited trails without getting caught (in the early morning when fog obscures the helicopter patrol's view, and on the crew's day off). Bicycle manufacturers have capitalized on a sport once described in *Rolling Stone* as an excuse "to get pig filthy and act rude" with ads that peddle products with appeals to machismo normally reserved for beer, truck, and motorcycle campaigns.

"There are definitely two sides to this," says Steve Fiala, trails coordinator for the EBRPD. "There's a large contingent of very nice, responsible bikers. They tend to belong to clubs and are concerned that their recreational activity not be eliminated from the park system. They have a specific trail etiquette, they self-patrol, they distribute brochures on trail riding. Unfortunately, it takes one renegade to create a negative impression of the sport."

Mountain-bike proponents are quick to portray themselves as principally safe, sane, courteous, and environmentally conscious—with perhaps a few adolescent spoilsports thrown in.



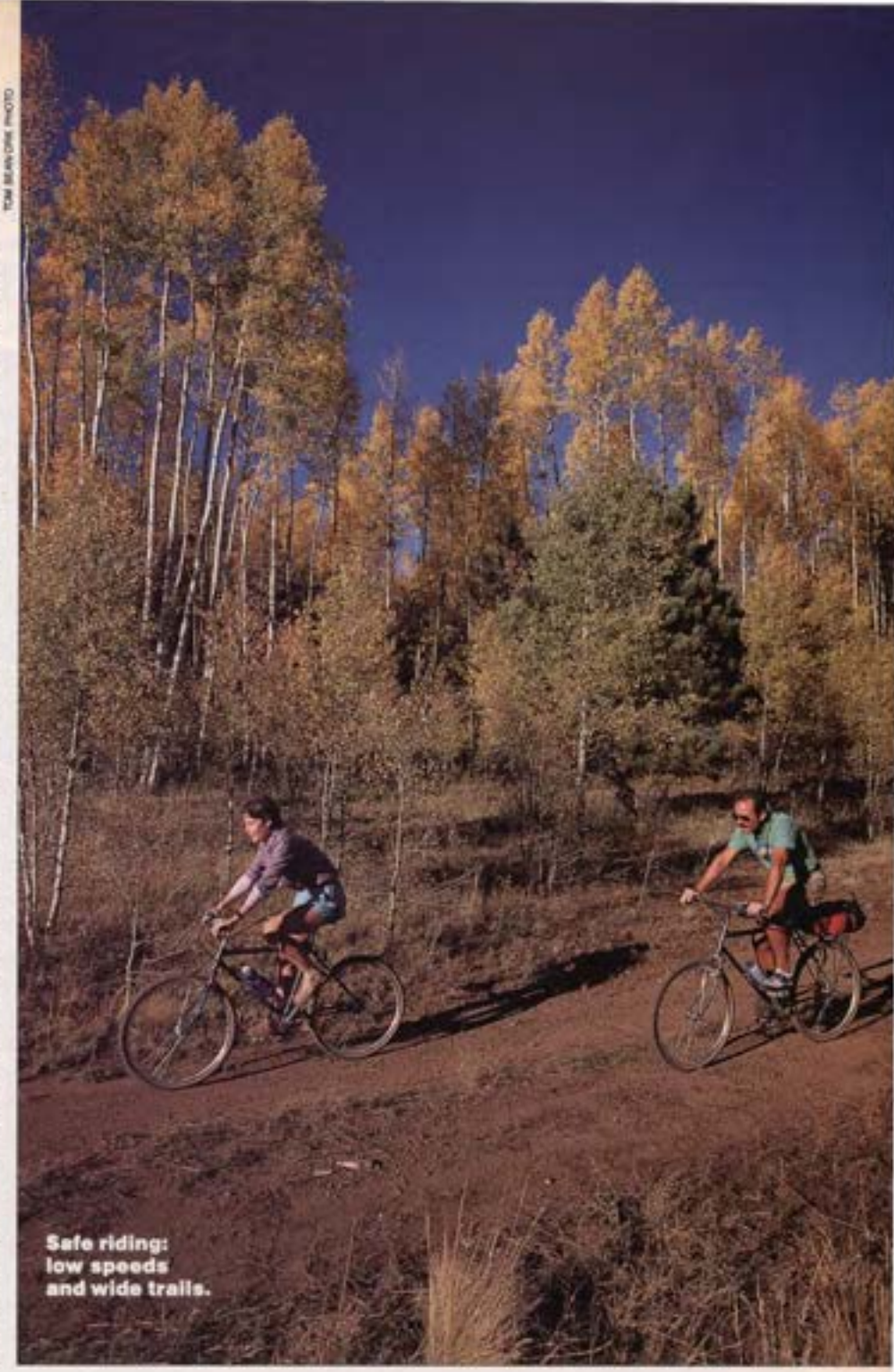
DENNIS COELLO

Along the White Rim Trail, a jeep road in Canyonlands National Park, cyclists have gouged furrows on their way to the canyon rim.

"Let's face it," says Chris Ross, director of the National Off-Road Bicycle Association (NORBA). "Some mountain bikers fail to follow switchbacks. We're not going to deny this or other types of banzai riding. What we're trying to do is get the word out that this is wrong, and why it's wrong. Most of our members pull off the trails for hikers and get off their bikes for horses. But there are some who don't. Let's not penalize all because of a few."

"I sympathize with people who have difficulties with kamikaze riders," says John Groo of Rim Tours, a bicycle-tour outfitter in Moab, Utah. "At least more and more writers for mountain-bike magazines are discussing this problem of idiot riders and their cost to us all. I think most riders have been educated. They pick up the need to ride correctly, environmentally, from other riders. A park ranger just the other day told me the situation has definitely improved. They're getting more bikes than ever and having less trouble."

In an attempt to spread the word to new riders, NORBA provides posters and stickers to bike shops that describe its 11-point code of etiquette. The code calls for safe riding as well as respect for trail-use designations. The organization hopes that retailers will attach the small stickers to the frames of every bike they sell. One major mountain-bike retailer, REI, Inc., displays "hang tags" on its mountain bicycles, encouraging riders to ride "only on trails officially approved for mountain-bike use."



TOM BEAN/DRK PHOTO

Safe riding: low speeds and wide trails.

As might be expected, only mountain-bike organizations support the idea of leaving regulation up to cyclists' nascent self-discipline. The most innovative regulations have been put in place by land managers in large parks near urban areas (such as Tilden and Tamalpais) where conflicts between hikers and bikers are common. In Tilden, bikes are allowed on paved and unpaved roads. "If one of our trucks can drive it, it's a fire road and bikes are welcome," says Park Supervisor McDonald. "If it can't, it's a narrow-gauge trail and bikes are prohibited." The policy is in effect on all 60,000 acres of parkland in the district, although individual parks may enforce stricter controls where trail conditions warrant it. Each Tilden trail is posted with the trail name and the type of travel allowed on it. Many also sport signs showing who gives way to whom (bikers yield to hikers; all yield to horses).

The Sierra Club staked out a hard-line position in 1985 when its board of directors included all-terrain bikes in its strict off-road-vehicle policy along with motorcycles and dune buggies. The policy immediately came under fire from outside and within the Club (17 percent of the Club's nearly 500,000 members own ATBs, according to a 1988 survey). In 1988 the Club separated its bicycle and motorized-vehicle policies but still maintained that bicycles should be prohibited from designated wilderness, and allowed on other public lands only after thorough analysis and public review.

"Bicycles are vehicles. There's no getting away from that," says Sally Reid, a Club director and the organization's vice-president for conservation. "Trails must be analyzed by land

JIM YOSHIKAWA

DENNIS COELLO

Full-steam biking and leisurely hiking rarely mix. Like many large parks near urban areas, City Creek Canyon in Salt Lake City tries to keep cyclists off single-track trails.

managers for their appropriateness for bicycle use. Obviously, there are trails that should be left open to bikes. I have no objection to bicycles on trails where I can see them. But the way they're being used in parts of the Angeles National Forest is to drive up the roads and scream down the trails like downhill skiers. But it's a trail, not a ski run."

Not surprisingly, many mountain bikers feel the Club's approach casts them as environmental foes rather than friends. "I ride around with a stove, I bury my wastes, I pack out all my garbage, and I get really worked up over environmental issues," says Steve Howe. "But pretty soon I think you'll have to wear an anti-gravity belt out there, because they aren't even going to want your footprints."

"Scratch a mountain biker and you get someone with an abiding respect, affinity, even need for the wilderness," writes Bruce Feldman in *Mountain Bike* magazine. "It's no surprise, then, that the rift between the mountain-biking community and the Sierra Club has caused much bewilderment and self-examination. To many mountain bikers it's manifested as a feeling of betrayal by a valued friend."

While mountain-bike organizations and conservationists move toward a middle ground on some points, the fight over access to wilderness areas may never be resolved. At issue is interpretation of the Wilderness Act, passed by Congress in 1964. That legislation unequivocally states that there shall be "no use of motor vehicles, motorized equipment . . . [and] no other form of mechanical transport" in wilderness areas.

But right of access became murky when, in 1965, Forest Service regulations governing the administration of wilderness areas on its lands seemed to give bicyclists a green light by defining mechanical transport as "any contrivance . . . propelled by a nonliving power source." When mountain bikes came along years later, many bikers therefore believed that their vehicles were allowed in wilderness areas. It wasn't until 1983 that the Forest Service decided that the wording of the Wilderness Act took precedence; since then, the bikes have been prohibited in wilderness areas.

Some cyclists still hope Congress will enact bike-friendly amendments to the Act, which NORBA lobbied unsuccessfully for in 1985. But opposition among conservationists is solid. "It's the cumulative effect of things like this that really hurts our national wilderness system," says Ed Bloedel, who was in charge of wilderness management for the Forest Service until 1988. "Once you begin making little exceptions here and there you begin to lose what you're trying to provide in the first place—a chunk of primitive America."

At issue is the very meaning of wilderness. "The purpose of wilderness is to protect the sanctity of the ecosystem," says Sierra Club Director Reid. "People visit as guests. And they visit quietly, leaving the least possible impact. That's what wilderness is about. I wouldn't care if they closed wilderness to human entry if that were necessary to protect the ecosystem."

Cyclists who disagree have simply voted with their wheels —riding on prohibited lands and hoping they won't get caught. In a 1987 column, the editor of *Mountain Bike* magazine exhorted his readers to ride "preferably on closed trails, the oxygen every fire needs. If we all join in this conspiracy, we probably won't open wilderness areas to bikes and we still won't be able to traverse the Grand Canyon by bike, but sure as hell we'll have some fine table-banging, tongue-wagging, bike-riding, beer-drinking parties to celebrate the latest opening of a state park's trails to bikes."

Most mountain bikers, though, recognize the kamikaze rider as a common enemy who imperils hikers and equestrians and assures the eventual exclusion of mountain bikes from trails. The past few years have seen the rise of cycling organizations trumpeting riding etiquette and encouraging cyclists to assist land managers with trail maintenance, while groups like the Sierra Club have come to realize that mountain bikes are here to stay. There remains a great difference between the conservationists' view that public lands should be closed to bikes until selectively opened, and the cyclists' view that those lands should be open to bikes until closed, but the two groups agree that bikes have a legitimate place on some trails and not on others. The basis for discussion—and settlement of differences that seemed intractable not long ago —is clearly established. ■

DENNIS COELLO *is a mountain bicyclist, Sierra Club member, and author of* Mountain Bike Rides of the West *(Northland Publishing, 1989) and* The Complete Mountain Biker *(Lyons & Burford Publishers, 1989). He lives in Salt Lake City.*

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KENNETH MAYLAND

Summer Snow

JON GRASS

IT MAY SEEM FOOLISH TO LOOK for snow just as summer returns to North America. After all, the season finally brings hospitable conditions to the backcountry, freeing hikers to enjoy wilderness without the forced-march, gird-your-polypro-and-bear-it attitude of winter travel. The days lengthen and grow warm, migrating birds return, wildflowers bloom. Nature seems happy to have shrugged off the cold, wet, deep, nasty snow of winter. Humans would be wise to follow its example.

But every so often on a summer expedition—when you're far enough north, when you're up high enough—you'll chance upon a glistening white snowfield cradled by towering crags that slice the cerulean sky like a saw blade. It's a scene that steals your breath, that makes a backpack-laden climb to the alpine edge completely worthwhile. Something primordial is at work here, real throne-room-of-the-mountain-gods stuff.

Besides answering the soul's call of the wild, summer snowfields and glaciers are fun. You can hike, frolic, even ski on them wearing shorts and a T-shirt, then retreat to the relative warmth and comfort of a campsite staked out on bare, brown earth.

Snow is as dangerous in summer as it is in winter, so you'll want to take some precautions. Since air is thin at high altitudes and snow reflects sunlight, it's a good idea to coat yourself with the highest-protection sunscreen you can find. You'd also be wise to wear a wide-brimmed hat and a pair of sunglasses or glacier goggles to block ultraviolet rays. Keep in mind that temperatures will plummet when the sun sets or is obstructed by peaks, exposing the unwary to frostbite or hypothermia. And for more than modest treks across snow and ice, use crampons, ice axes, and ropes for safety.

The rule of thumb for finding warm-weather snow is to head west, north, and up. Year-round glaciers and sun-shaded, north-facing vestiges of last winter's furies top the high peaks of Alaska, the Cascades, the Rockies, and the Sierra Nevada like frosting. (Easterners can also find snow as late as midsummer in New Hampshire's Tuckerman Ravine.) The following pages describe a few of the places where you can pass the dog days tossing snowballs.

IT ISN'T EASY TO DESCRIBE SOMETHING AS IMPONderable as the Columbia Icefield. Perhaps it's a broken-edged bowl of ice cream six miles wide, its contents spilling down the sides. Or a giant octopus at rest on a limestone plateau, its long tentacles reaching down into the valleys.

Or you could resort to hard, cold facts: a total area of 90 square miles, maximum thickness just over 1,000 feet, relief 7,500 feet. But in the end you might as well say that there is something huge and rugged and awesome in the Canadian Rockies, something that's well worth seeing.

Glaciers abound in the region, but nowhere other than here (and the Chaba and Clemenceau icefields immediately to the west) are they found on such a scale and in such profusion. Together the three icefields stretch 60 miles along the Continental Divide, forming the core of a wilderness of forests and mountains sprinkled with tiny, turquoise lakes in Banff and Jasper national parks.

One of my favorite destinations is Castleguard Meadows at the southeastern end of the Columbia Icefield. Including a three-mile traverse of the Saskatchewan Glacier, the two-day hike to the meadows passes almost continuously through open country. It begins in Banff National Park just south of Sunwapta Pass on the Icefields Parkway, which runs from Lake Louise north to the town of Jasper, Alberta. You cross a small hill that somehow survived the glacier's advances, then follow a rock-strewn valley between soaring cliffs and scree slopes, where mountain goats lick salt from buff-colored hummocks while gulls wheel in the sky.

The Saskatchewan Glacier, which descends 2,500 vertical feet from the icefield, is six miles long and more than a mile wide. The hiker makes the transition from rocks to ice in a single step where the glacier's fan-shaped toe meets earth. In mid-July—the best time to traipse the Canadian Rockies—the lower portion of the glacier is free of snow; boots crunch on its crinkled, sun-eaten surface. Everywhere are streams of crystalline meltwater, which join in swales and eventually swirl away down deep, blue holes in the ice.

Strictly speaking, crossing the ice is mountaineering rather than hiking. Apart from its spectacular scenery, the region is renowned for its bad weather; an electrical storm or howling gale can turn the glacier and the icefield above into a very inhospitable place. The trick is to include raingear in your pack and keep a leery eye on the sky at the crest of the icefield to the west.

Getting off the glacier is more difficult than getting on. As you head south toward the moraine that marks the northern terminus of the meadows, crevasses begin to appear. Wide and ominously deep, they run roughly parallel in staggered rows. Hikers progress in a zigzag fashion around the chasms' pinching ends as if negotiating a maze.

As the novelty of the ice begins to wear thin, you reach Castleguard Meadows, which abounds with wildflowers, fat hoary marmots, and clumps of fir and spruce. From the 10,000-foot summit of Castleguard Mountain you can look back on two million years of glaciation—not a bad conclusion to a two-day hike. **—David Thomson**

LARRY CARVER

LARRY CARVER

LAST-GASP SKIING

The Tetons

FRANK S. BALTHIS

THE WYOMING HAYFIELDS HAVE JUST TURNED GREEN when my friend Peter asks, "Are you ready for 10552?" He's talking about a nameless peak near the southern end of Grand Teton National Park that people refer to by its elevation. Visitors might not notice it against the stupendous backdrop of the Tetons, but its east face is locally famous: For a brief time early each summer the skiing here is as good as anything the Tetons dish up in winter.

The peak offers nearly 4,000 vertical feet of evenly pitched snow, steep but not too steep—the sort of slope backcountry skiers live for. A dozen other peaks in the Tetons provide similar conditions, but 10552 is the classic. Even during January, when cold powder lies deep, Jackson Hole skiers talk wistfully about the slopes of 10552.

Mind you, the best snow melts fast. As summer progresses, you've got to reach higher and higher into the shaded upper canyons, where fairly good snow lingers until the end of July.

Just past 5 a.m. Peter pulls up in his battered green Saab and we head across the valley floor, the Tetons looming against the stars. An early start is important because the skiable terrain faces east; if we leave before dawn, we can walk all the way to the top in light boots. Any later and the snow would be too soft to support our weight, and we'd have to climb wearing skis.

At Death Canyon trailhead we shoulder our packs and set off in the gray predawn light. When we reach the snow half an hour later the walking gets easier because we don't need to follow trails. Tangled brush and loose rocks lie buried and invisible. Swift-flowing streams gurgle beneath our feet and the melting snowpack.

By dawn we've gained a thousand feet. The crags of the Tetons turn a brilliant red. In a few minutes the sun works its way down to where we toil slowly upward, striking us with a burst of warmth. We strip off extra clothing and put on dark glasses. But the race is on as the snow begins to soften in the sun. The surface gets slippery, and we're forced to kick steps in steep places to gain sure footing.

When we reach the "2" in 10552 we're down to T-shirts and shorts. We'd like to admire the summit view, but already our boots are sinking an inch into the snow. Later in the summer, after innumerable freeze-and-thaw cycles, the snowfields will firm up enough to support a hiker all day. But by then the snow will be cupped and ridged by the sun—pleasant enough to walk on, but torture to ski.

Between the time last night's ice melts into skiable snow and the sun turns the snow into deep slush, we've got about an hour of skiing. But what a perfect hour! Untouched by other skiers, the top layer of snow forms a veneer as smooth as gelato. Our skis bite cleanly into the surface without sinking far enough to make things difficult. There's no worry about hitting an icy patch or suddenly falling into deep, soft crud. We ski until our legs can't stand it anymore, or until the deepening slush signals the end of our allotted time. Then we lean on our poles, panting in the warm sun, and think how nice it is that the best skiing comes when winter is a distant memory.—**Jeremy Schmidt**

I remember one sunny June morning in Alaska when searching for snow was the last thing on my mind. I had just left the glaciers of Mt. McKinley after spending 30 days climbing the Alaska Range, and I was celebrating by stuffing myself with sourdough pancakes at the Talkeetna Roadhouse. I'd seen enough snow and ice for a lifetime, and all I was interested in were tropical islands, hot showers, beds with mattresses, and home-cooked meals.

But as ready as I was to forsake all things white and frozen, I couldn't help listening to the fellow sitting on the stool next to me as he described his trip to Alaska's Prince William Sound. He conjured a world where tidewater glaciers flow from snowy mountains to calve icebergs in a blue ocean, a place where sea kayakers follow pods of killer whales for miles, and skiers and climbers can mount multiday expeditions using a sailboat as their basecamp. By the time I'd finished my second stack of flapjacks, I'd forgotten all about heading south and was plotting a trip to the coast.

Prince William Sound is a 25,000-square-mile passage southeast of Anchorage that's protected from the open ocean by islands. A maze of inlets, mountains, and fjords, the sound offers more shoreline for exploration than the entire coast of California—some 2,500 miles, all wilderness except for the settlements of Valdez, Cordova, Tatitlek, and Whittier. Rising out of the sound are the Chugach Mountains, blessed each year with 50 to 60 feet of snow, a wintry benediction that makes them one of the snowiest places on Earth. The result is a forest of pristine peaks coated with glaciers from the summit of 13,172-foot Mt. Marcus Baker to sea level. In the shallows seals and their young cruise the water, while on shore brown bears forage before a backdrop of alders and high glaciers.

It's an area that can be reached using conveyances rarely associated with snow and ice. You can sail or paddle from the town of Whittier to the Sargent Icefield, an inland sea of ice 825 square miles in area. Unload the boat, strap on skis or crampons, and head out for a day or a week of summer skiing or hiking on any of the glaciers that spill down to sea level. From Valdez the snow connoisseur can choose day trips via car to the snowfields along Thompson's Pass, or ski odysseys connecting the Valdez Glacier with the Tazlina, the Nelchina, or the Matanuska, a glacial network spanning hundreds of miles.

Whether you kayak, sail, ski, climb, or combine all four, a certain amount of expertise is essential. For the inexperienced, guides and instruction are available, and the sensation of moving through an untouched wilderness is worth the price.

To approach an unknown peak on a boat under sail, to paddle along a mountainous coast or slalom among icebergs, to peer at unskied snowy slopes rising behind a forest, to discover the mosaic of a glacier spilling into the sea—it's enough to make me postpone my trip to the tropics indefinitely. **—Chris Noble**

At Sierra*'s press time the largest oil spill in U.S. history was spreading across Prince William Sound.*

GEORGE WUERTHNER

CHRIS NOBLE

JEFF GNASS

Mount Shasta is a backcountry Valhalla. It stands thousands of feet above its neighbors, dominating the Northern California landscape for nearly a hundred miles in all directions. During winter the peak receives copious amounts of snow, enough to keep it mantled in white well into the summer. As the southernmost of the high peaks of the Cascade Range, it is treated to much better spring and summer weather than its cousins to the north.

Climbers and skiers tackle the mountain all year, although May through September is the best season. Steep volcanic slopes, variable terrain, and persistent snow-cover challenge both the novice and the accomplished mountaineer, and provide the backcountry skier with some of the longest, steepest runs in North America. A large downhill-ski area typically has about 3,000, perhaps 4,000 feet of elevation drop. If you choose the right day and the right route, it's possible to ski perfect spring corn snow from Shasta's summit to your car in the parking lot—a vertical drop of 7,000 feet.

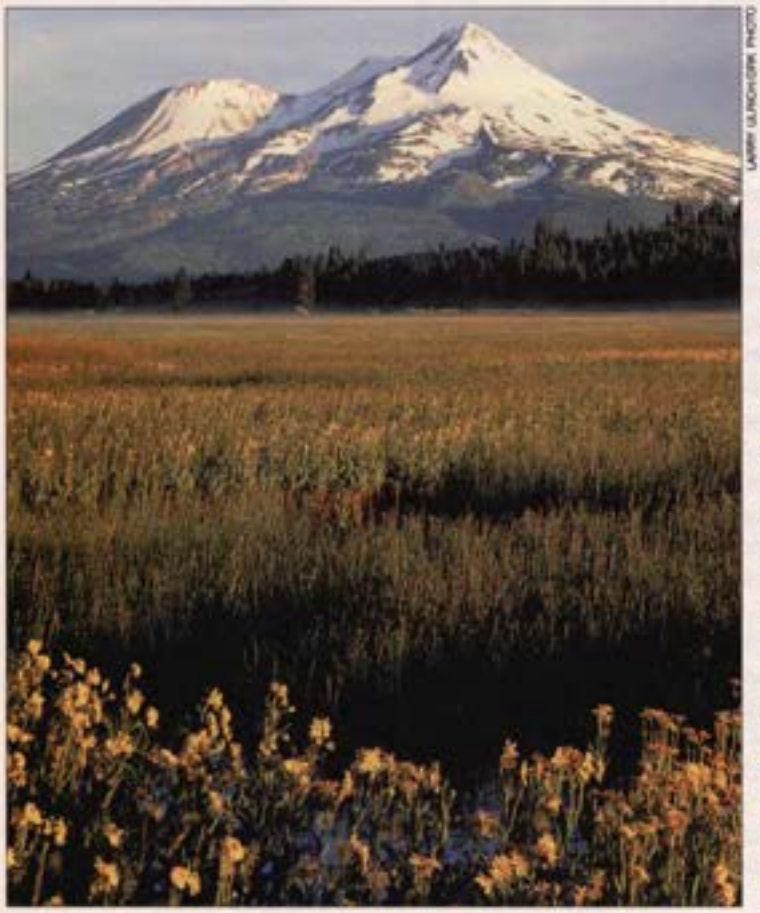
On a hike to the peak in early June, with the temperature hovering around 5 degrees Fahrenheit, we inch our way up to 13,000 feet on Shasta's western shoulder. It's the first time some members of our group have wielded ice axes and

STEPHEN KASPER

stomped across snow with crampons clamped to their boots. So we play it safe, working our way across a moderately steep slope that skirts the more challenging Whitney Glacier.

Unwittingly we've balanced on rock-solid blue ice spanning a concealed *bergschrund*, a chasm that forms where the top of a glacier pulls away from a mountain. It's clearly too much for novices. One member of the group slips, but quickly stops her toboggan ride with a newly learned self-arrest using her ice ax. No one is hurt, but it's a heck of a place to test new techniques.

A quick check reveals the cause of the slip: Three of our rental pairs of crampons lack front points, the metal teeth that give flat-footed humans the equivalent of claws. We gingerly retrace our steps off the icy slope and search for a safer route. We'll have to traverse around rocky Casaval Ridge to the south. It's going to add at least an hour to the climb, but without front points or a rope to check a serious fall, it's the safest way to go.



LARRY ULRICH/DRK PHOTO

Early this morning we staggered out of our tents onto snow so cold it squeaked under our boots. Camp resembled a giant freezer that hadn't been defrosted in decades: Every piece of equipment we'd left outside had been plastered with delicate needles of windblown rime ice during the night. On the surrounding slopes, hoarfrost reflected the rising sun from myriad prism-plated ice crystals, as if handfuls of diamonds had been strewn across the mountainside. It was an arctic awakening on what we had hoped would be a salute-to-summer weekend.

Now, as we reach 13,000 feet, clouds begin to form around us. We eventually pick our way up the ridge onto an open and level snowfield. Could this be the summit? We scrutinize the map and realize we've almost 1,200 feet of climbing to go. We grope our way across the plateau in a whiteout, then wheeze up aptly named Misery Hill into clearing skies and the summit at 14,162 feet. After a snack and a few photos, we remove our crampons, ready our ice axes, and glissade nearly all the way back down the mountain. —**Steve Kasper**

ONE OF THE MOST SPECTACULAR, ACCESSIBLE, AND popular high hikes in the Cascade Range leaves the end of a gravel road five miles inside Washington's North Cascades National Park and climbs to 5,392-foot-high Cascade Pass in less than four miles.

The trail accordions up a fiercely cloven valley through cool, green forest splashed with ferns. Gray stones echo the fall of the Cascade River far below, while comets of water spill from the glaciers on Johannesberg Mountain above and to the west. The world seems to fall slowly away until it's easy to imagine that one day nothing will be left but shifting sky and hard, glinting light.

As we emerge from the thick forest near Cascade Pass the world opens up; cloud-like glaciers hang from a line of peaks like a tightrope bisecting east and west. Pelton Basin and the Stehekin Valley lie to the east; the north fork of the Cascade River flows to the west; we're circled by a sea of jutting peaks: Eldorado, Forbidden, Sahale, Glory, Magic, Mixed-Up, the Triplets. . . .

We continue up to 8,000-foot Sahale Arm. The surface of Doubtful Lake below us ruffles skittishly in a downdraft as we climb; silver sparks veer across it like a flight of swallows. We traverse a ridge plush with lupine, dock, and heather. The track steepens; grass gives way to shattered stone and, finally, stone to snow, hard and abrasive.

The Sahale Glacier may make a lousy snowman, but it makes a good cup of tea. Enjoy it, because the trail to it is one of precious few in the park. A handful of trails traverse the deep valleys, keeping out of trouble; only three cross high passes. In fact, the 675,000-acre park (which is split into northern and southern sections by the North Cascades Highway and the Ross Lake National Recreation Area) has no lodges or visitor centers, and only one other road, the unpaved one that ends at the Cascade Pass trailhead.

What remains is as rugged a mountain fastness as you'll find anywhere. The Picket Range, the Eldorado Icecap, and the sheer walls of Nooksack Cirque form a range of savage splendor, quite different from the image of great, solitary volcanoes that evoke the Cascades for most.

Lying on the glacial moraine, we sip our tea, bask in the sun, and watch a falcon sketch circles in a thermal high above us. It tucks its wings and dives at us like a missile, braking with a great whoosh of feathers only at the last moment.

We decide to leave paradise to the falcon. The evening light sweeps across the ridge as we silently descend. Fingers of sunlight probe through the clouds over Johannesberg Mountain, turning like the spokes of a great wheel, westward over Cascade Valley. —**Ben Groff**

By David Rains Wallace

MIND IN A FOREST

Perhaps it wasn't the strangeness of Bulow Hammock that made it seem dangerously seductive, but a certain familiarity. It is, after all, dangerous to be human.

THE LOST ONE

AS A CHILD, I often got lost in the woods because I'd rush in without a thought of finding my way out. Search parties never were required, but I spent many afternoons circling distractedly in swampy second growth. This approach to exploration climaxed in college when some friends and I climbed Mount Washington in New Hampshire without packs, maps, food, or any other equipment except summer jackets. I don't recall feeling too worried when, as we got above timberline, it started to get dark and snow, but I was glad, and surprised, when we came to the hostel halfway up the mountain. Seeing the grave monuments that dot the peak did make me a little wiser the next day.

Such memories came back as I groped my way through Bulow Hammock. It was embarrassing. I had traveled, written books, but I quailed before this . . . thicket. If I could still get lost with my middle-aged knowledge, it reflected on the quality of the knowledge. I had accumulated a lot of it, but like most accumulations, it never seemed quite enough. After the energy and desire of learning about something were spent, I'd feel a void within my expanded horizons that could only be filled, it seemed, with more knowledge, as though the

Illustrations by Pamela Prichett

thrill of discovery was as psychologically addicting as marijuana. Sometimes I felt like a balloon, getting thinner-skinned as I expanded until some weak point would give way and I'd burst or subside in a spluttering of hot air.

It wasn't an unusual predicament—in fact, it was typical: to mature, achieve, and then be reduced to bewilderment by an unresolved past. That my latest bewilderment concerned a patch of semitropical forest seemed all the more typical since that was where humans came from. I certainly wasn't the first to stand in bewilderment before a green wall. Florida hammocks have a long history of bewilderment, beginning with Ponce de León in 1513, although Ponce's experience is as much myth as history. He is supposed to have struggled through the hammocks looking for a fountain of youth, but his expedition's accounts mention only Indian hostilities and navigational problems. . . .

Animals and ignorant people can get lost as well as educated ones: They can wander off aimlessly and end up in the wrong place. Yet animals may be quite calm even when they *are* lost, miles from their accustomed places, while educated humans often get hysterical when they *aren't* lost, when they're only a grove of trees or a hilltop away from their destination. Education seems to make getting lost more fearful, not less.

Our fear of getting lost has extended beyond geography. Almost every square mile of the world has been mapped in detail, but a sense of misplacement and bewilderment grows, and with reason. In an evolutionary sense, we are misplaced from the ecological niche for which biology prepared us. We're so misplaced that we've only just realized we ever had an ecological niche, that we didn't start out living all over the planet as Eskimos and Bedouins and Indo-Europeans.

This long-forgotten past now fascinates us, as though we hope it will restore a sense of orientation. We comb Ethiopian and Tanzanian badlands for hominid bones and pursue harried apes around Borneo and Zaire seeking older connections. Yet paleontology and anthropology sometimes seem a little like digging wells on a lakeshore. We marvel as the water trickles into the carefully dug holes, but turn our backs on its source because it seems too big and murky to tap. Our brains haven't changed that much physically from our hominid ancestors', and the planet they perceive has changed little. At one point, the brain was regarded as a tabula rasa at birth, a blankness waiting to be programmed by learning and experience. Now we know that the brains of even newborn organisms are preset to do some complex things. Newborn humans can cling to overhanging branches like monkeys. The unlearned spatial orientation Marais observed in the young bushman might also be innate in some way. At least, the fact that such orientation seems erased or obscured in educated people suggests an innate origin. Infants lose their branch-gripping reflex before they learn to walk.

Our fear of getting lost in the woods might arise from a psychological dislocation as much as from a geographical one. A brain innately equipped with a self-guiding reflex might panic on finding itself cut off from that reflex. Of course, the idea of a brain panicking, or doing anything on its own, goes against a basic concept of biology: We assume that *organisms* panic, not brains, that the organism is the highest functional unit. This is certainly true in that most of the organism is involved in panic, not just the brain. Yet, when people get lost in the woods, the brain seems to *induce* panic in an organism not immediately threatened, suggesting that the organism is not the solid unit we like to believe it is.

I was sensitive to this notion as I walked in Bulow Hammock, because my brain had been giving my organism a hard time. My small bewilderment in the hammock echoed a big one I'd been experiencing for several years while backpacking in the western mountains. I'd felt safer sleeping out in the woods than in civilization, but disturbing things had started to happen. I'd begun having irrational fits of terror. Dozing in my sleeping bag, or walking along a trail, I'd suddenly experience dizziness, a racing heart, cold sweats. Sometimes if I closed my eyes I'd see bony human faces mouthing incomprehensible words. I went to a doctor, who found nothing wrong physically. I might as well have been possessed by evil spirits. . . .

Perhaps I needed to know my mind better before I could get on with understanding the forest. Yet traditional ways of knowing minds had remarkably little to do with forests. Psychiatry could have told me about night sweats, but it would have concerned parents or toilet training rather than trees. I wanted to understand my mind in relation to trees.

It seemed at least a possible aspiration. If my mind was imperfectly related to my entire organism, it was also related to other things, like forests. Organisms exist in ecosystems, after all, and ecosystems shape organisms. Of course, forest life stopped shaping the human brain directly a long time ago. Yet one of the first things psychologists learned about the unconscious brain is that time doesn't exist for it, that childhood memories are as "present" as those of five minutes ago. If the brain retains innate "memories" such as spatial orientation, they also may be timeless, if hidden.

I couldn't think of a place where my relationship to for-

est went back further than Bulow Hammock. It was the only forest I'd known as child and adult. I even had ancestors in swampy southern lowlands. One of them had swum the Pee Dee River escaping a British prison camp during the Revolutionary War. There also were much earlier ancestors, in a sense, because the hammock had tropical aspects, and the human mind evolved in warm, spicy places.

I wondered if I might explore the hammock not only as a home of wild plants and animals but as a connection to my wayward brain. The brain is like forests in being diverse and multilayered. I'd even felt in the western mountains that the old-growth forests might have a kind of consciousness arising from complexity. Like my brain, the hammock was structured hierarchically, with newer, more complex things growing from older ones. Most mysteriously, brain and hammock shared a propensity for mimesis, for producing similarities between different things.

I didn't expect anything conclusive from the experiment. I felt like a medieval man trying to map the universe. We have no mental telescope, and may never. Still, that was no reason for not trying. I wouldn't have to drive hundreds of miles on lousy Forest Service logging roads as I had in the western mountains, and I might wind up farther from the pavement, in a sense.

Psychiatry could have told me about night sweats, but it would have concerned parents or toilet training rather than trees. I wanted to understand my mind in relation to trees.

THE WHISK FERN

I WENT BACK TO THE HAMMOCK a few days later. This time I kept going through the spiderwebs until I came to a more open place, a swampy floodplain dotted with big cabbage palmettos and red cedars. Chest-high swamp ferns grew on the ground or the palmettos with impartiality. There were also some red maples, the same species that fires up New England in autumn. Their fallen leaves looked incongruous under the palmettos. Even more incongruously for November, the red maples were about to flower, their deep red buds swelling as their northern conspecifics wouldn't until April. . . .

A troop of lesser goldfinches flew down to drink, like a miniature parrot flock in their fussiness and greenish plumage, then shot away. I crossed a rivulet on a palmetto log, of which great numbers lay about (as I could understand from the way wind whipped the standing ones back and forth). When I bent to pass one precariously leaning trunk, my eyes fell on a little plant growing on the palmetto's swollen base.

It was an odd plant, leafless, a spray of wiry green stems with bulbous, pea-size structures at the joints. I'd never seen a living one, but I remembered it from a college biology textbook. It was a whisk fern, which isn't really a fern, and isn't related closely to any common plant alive today. It's much more primitive than ferns, lacking real root structures as well as leaves, and reproducing only in specialized moist environments because the sperm must swim through dew or other surface moisture to reach the egg cells. It's pretty much the same as the plants of 400 million years ago.

Bulow Hammock was even more venerably tropical than I'd thought. Whisk ferns grow only in warm climates today (Hawaii has them too) and probably always have. Life had enough trouble climbing out of water without dealing with frost at the same time. Here was a survivor of the first tropical forest perched gnomelike on a distant descendant.

There were other survivors. In a grassy glade, I came to a plant that resembled a small, trunkless palm. It was coontie, which isn't a palm but a cycad, a group of plants that has lived in the tropics for about a hundred million years longer than palms. I've heard that few insects eat cycads because most modern insects evolved after they did, although I've seen modern-looking caterpillars eating cycad leaves. Most modern insects did evolve along with flowering plants, and cycads aren't flowering plants, but gymnosperms. They bear naked seeds in conelike structures as do their relatives, the conifers.

In keeping with their tropical background, coonties bear much showier cones than pines or firs. Although small and ground-hugging, they sport eggplant-size female cones enclosing coral-red seeds as big as Brazil nuts. They look highly edible, whether or not sufficiently primitive creatures exist to eat them. Perhaps their color attracted dinosaurs.

. . . Finding the whisk fern and cycad made me feel I was beginning to get somewhere. Not only had I *found* something, which in itself provides a certain sense of orientation, but I'd found evidence of impressive tropical continuity in this thicket beset by freeways and resort communities. It gave me hope of finding something equally ancient and significant in my tangled and beset brain. I went on with renewed confidence, but continued caution, keeping between the open swamp and the denser hardwoods, in a southerly direction toward the hammock's center. The going was easy for a while, the golds and reds of the hickories and sweet gums cheerful to look at. . . .

Then the demarcation between swamp and hardwoods that I'd been following petered out in a sunken streambed full of snaky roots and black pools and overhung with dense vegetation. There was more swamp to the west, but it was too wet to walk comfortably in. Something was moving around in it, something pretty big. I heard wings, caught a

glimpse of something black and white, and rather scaly-looking. It was probably just a wood stork, a bird with a naked, wrinkled head, but it seemed macabre among the huge, flowerless lilies.

I'd passed through a sizable patch of chest-high saw palmetto to get to the swamp in the first place. I decided it was time to see if I could pass back. I did, without difficulty, but not without some agitation from my brain. I could feel anxious electrical impulses shooting down my spine toward my legs and stomach, telling those extremities to get a move on. I resisted them, trying to be a good integral organism, finding and following my little arrows. It was near sunset when I got back on the track. I sat on a fallen trunk to see what creatures might appear, but none did.

THE SUBTROPICS

I'D FOUND AT LEAST ONE CONNECTION between the hammock and the brain, which also has its whisk ferns and cycads surviving under the loftier growth. Scientists speak of two older brains under the enlarged neocortex we share with apes, which is associated with speech, toolmaking, and other human traits. Directly beneath the neocortex is the limbic system, which we share with all mammals, and under that is another system, including the hypothalamus and basal ganglia, which is basically the same as reptiles' brains.

The analogy could go further. As the hammock contains not only whisk ferns and cycads, but most other kinds of plants that either evolved—algae, mosses, club mosses, true ferns—one could say that the brain contains elements also of amphibians, fishes, invertebrates, and so on back to the individual eucaryotic cells. As the hammock's higher plants depend on the fungi, algae, lichens, mosses, and herbs that compose its soil, the brain's higher functions depend on its lower ones. Indeed, at the lowest living level, the cellular one, brain and hammock depend on the same things.

THE STINKPOTS

THE HAMMOCK GAVE ME a kind of seminar in the unexpected the next time I went in. The weather had suddenly turned steamy-hot. Such abrupt changes were among the things that drove Audubon crazy about Florida. "The climate here is the most changeable I ever saw," he complained, "down to forty-five and then a smart frost after which the southerly winds have made us all sweat at our drawings."

Mosquitoes and ticks seemed rather invigorated after the cold snap, but not all animals were unscathed. Many golden silk spiders were dead in their webs, although still so colorful that only a shriveled aspect to their abdomens evinced their demise. A rotund little white spider sat on one corpse, perhaps lying in wait for carrion insects. The green and pink spiders I'd seen on the first walk had disappeared.

Dead and disappearing spiders seemed appropriate for a time when most of the trees were shedding their leaves, even if the maples were also budding out, and the magnolias and live oaks were *not* shedding their leaves. When I made my way to the palmetto swamp, however, I stumbled upon a creature that seemed to have almost nothing appropriate about it. Apparently unfazed by the frost, the biggest stick insect I'd ever seen strode across the leaf litter. Stick insects are mainly tropical animals, and the few species that live in the northern United States disappear promptly with the cold weather. They also stay in the trees and bushes, where their resemblance to sticks makes them hard to see. This Florida stick insect, which was light brown with black stripes, seemed to defy its category.

I picked it up, and it sprayed my hand with a pungent, turpentine-smelling substance that slightly irritated my eyes and nose even at arm's length. It wasn't as defenseless as it seemed, although this didn't explain why, looking like a stick, it chose to amble over the ground when there were trees to climb everywhere. I put it down, and it ambled away. (I later encountered others of this species on the ground.)

A marsh breeze coursed through the swamp, bending some palmettos almost horizontally. Dead fronds crashed unnervingly to the ground, but there was something exhilarating about the tossing of branches, backlit by the westering sun. Red and yellow hardwood leaves fluttered to the ground in flocks, like goldfinches and cardinals. The air felt cooler and drier after the breeze died, as though a new weather front was moving in. The mosquitoes seemed less insistent.

I followed the dry streambed south again, continuing past the track to the shell mounds. The bed quickly got narrower and shallower; it was a very young stream,

perhaps started from an erosion gully in the Bulow Ville fields. The trees in this part of the hammock were young, too, and close-growing. They admitted little sunlight, and the farther I went, the gloomier it seemed. . . .

It was getting late, but I kept on. I had a feeling I'd get somewhere. I crossed another bulldozed track, passed through more second growth, and got somewhere, to a large drainage ditch. Cut deep and straight into the white sand, it evidently drained pastureland to the west of the hammock. It was much too new to have been part of Bulow Ville, although there were some good-size saplings on its spoil banks.

There was a whistling sound, and a resplendent wood-duck drake flew up the ditch, then veered into the trees when he saw me. I climbed out of the streambed, trying to get a better look at him, and found myself at the edge of a little sinkhole. Holes caused by groundwater undermining limestone bedrock are common in Florida hammocks and contribute to their air of intricate concealment. Some are huge, full of azure water boiling up from springs. This one was little more than a puddle in a pit, a stew of brown leaves obscuring its bottom.

It was full of mosquito fish anyway, and they made their usual agitations as I approached. Something else was moving in the water, something black and shiny. It didn't look like anything I'd ever seen before. It seemed to have a hard shell, and I wondered if I'd stumbled on some kind of giant freshwater crab. I'd never heard of such a thing in Florida. Then I looked closer and saw that it was a small turtle.

It pulled its head underwater as I loomed above, but remained in sight. It wasn't one of the cooter turtles commonly seen basking along Florida waterways. It was shaped like a small snapping turtle, and I thought it might be a young snapper until my eyes got better at distinguishing reptile carapace from fallen leaves. Then I knew this was no immature snapper, because there was another turtle behind the first, and they were copulating. There was no doubt about that. The first turtle, evidently the female, couldn't move without dragging the second along behind her.

We blinked at each other a moment, then the female took alarm and began to burrow into the fallen leaves. She accomplished this quickly, but it left her mate in an awkward position. As she burrowed, he gradually was upended, still coupled to her, until he lay on his back, legs waving. I'd seldom seen a healthy animal in its native habitat look so helpless. As the female continued burrowing, she slowly drew him under the leaves, still upended, still gesticulating feebly. His face was the last to disappear, and it looked distinctly sheepish.

I didn't know whether to laugh or cry. It was ridiculous, but it was a little horrible: to be pulled helplessly into the ooze while pursuing the supreme pleasure of life. It was like a jungle-movie nightmare: reptiles copulating in slime, life an illusory exhalation from ooze. I went away with a creeping sensation.

Yet I felt a peculiar happiness walking back. The hammock had changed. The setting sun's light slipped under the tree canopy and reflected a deep maroon from the fallen maple and sweet gum leaves. It was somehow intoxicating, as though the air was hazy not with terpenes and water vapor but with a good Beaujolais.

I certainly had found *something*. Turtles are seldom seen mating, even more seldom in December. The turtles in the sinkhole were musk turtles (also called stinkpots because of the smell of their musk), among the most prolific of turtles, but even they are supposed to mate in spring, even in Florida. This defiance of expectation was impressive, as though the turtles might know something we don't.

The maroon light changed to topaz as I got back into the older woods, where yellow-leaved hickories, ashes, and hornbeams predominated over maples. Something was crashing about in the underbrush, and I looked that way, expecting to see a squirrel. It sounded like some such nimble animal bounding over the leaf litter. Another surprise: It was an armadillo, bounding nimbly through the leaf litter. I'd assumed that a shelled mammal would be as sedate as a turtle. Burdened by no such assumption, the armadillo bounded away.

PROBLEMS

I'D REACHED THE HAMMOCK'S CENTER at the drainage ditch—its spatial center, at least. A sand road across the ditch led south to the state highway. I didn't feel I'd arrived much of anywhere, except at confusion—tree insects on the ground, turtles mating in winter, bounding armadillos. There's nothing like a walk in the woods to fray biological generalizations. Nature can seem essentially confused, random, our notions of habits, cycles, and seasons mere comforting fictions to cloak a chaos in which a creature evolved to mimic a twig can arbitrarily abandon the trees. This can make larger questions, such as the supremacy of the organism, seem not only speculative but irrelevant.

I didn't know whether to laugh or cry. It was ridiculous, but it was a little horrible: to be pulled helplessly into the ooze while pursuing the supreme pleasure of life.

Of course, I wouldn't have found such unruliness in New England woods in December. The turtles would have been sleeping primly in the mud, the stick insects properly dead. Nature can seem more random the farther south one goes from the rigors of temperate seasons, a phenomenon humans should

consider in regard to our own southern origins. Our distant ancestors accomplished some unruliness of their own. Like the stick insects, for example, they were adapted to trees but took to the ground.

Since there's no clear fossil link between early apes and hominids, we don't know how and why our early ancestors came down from the trees. A drying climate some ten million years ago may have had something to do with it by driving apes out of dwindling forests into spreading grasslands. Fossils of tree-dwelling apes are common before that time, while fossils of ground-dwelling ones are common after it. Yet tree apes couldn't simply have climbed down and walked away as droughts shrank the forests. They'd need to have evolved some ground-dwelling capacity first.

It's been suggested that apes moved to the forest floor because they were getting too large to live in the trees, or because monkeys (which actually evolved *after* apes) had become more efficient in the treetops and forced them out. Fossils do show that early apes were smaller than later ones. But did apes come down from the trees because they'd gotten bigger, or did they get bigger because they'd come down? Early hominids weren't much taller than gibbons, the most arboreal living apes, although they were heavier. Did the apes have to get bigger to compete with monkeys, then have to get smaller so they could dodge lions in the savanna? Human evolution seems so tortuous one wonders how the poor things managed it.

Of course, they didn't manage it. They weren't trying to become us, which is so obvious that we generally ignore it. We think of human evolution as problem-solving, a kind of wilderness primate lab with sticks and stones instead of bananas and letter blocks. We are so deeply confident that life is a problem, and survival its reward, that it's hard to remember that this is an idea instead of a fact. Not content with seeing life as the individual organism's problem, or the species' collective one, scientific reductionists have imposed the stern duties and high rewards of problem-solving on the smallest known unit of biotic organization. The selfish gene, sociobiologists tell us, really controls the organisms and species whose DNA it inhabits in order to survive and reproduce through intricately computed breeding strategies.

The awesome fecundity of many organisms seems to support the view that survival is the problem. All organisms aren't awesomely fecund, however. And if survival is the imperative, why is there so much failure to survive? Why aren't all organisms limpetlike things, eternally clinging to the safest rocks? One can say that death is a solution to the problem of environmental change and physical wear, but it's not a solution that problem-solving civilization really much admires.

The greatest question of all, of course, is why the organism we regard as the problem-solver par excellence seems lately to be creating more deadly problems than it solves. If the enlarged human brain is an evolutionary tumor, it is beginning to seem like a malignant one. Loaded with maps, compasses, quadrants, roads, and other solutions to the problem of its place on Earth, it lapses into panic, withdraws into outright craziness; and there are few subjects about which we know less than the evolution of insanity.

Survival is a major evolutionary theme: We're still here after about three and a half billion years. But there is also that other great theme, extinction, and another that we call, for lack of a better word, change. We think of change as a part of problem-solving—life getting better adapted, more successful—but the evolution of flowers and brains has been considerably more than adaptation. It has created new worlds, and problems.

It's hard to see how the "problem" of human life could be solved, in an evolutionary sense. It's hard to see what it is. If our dreams of flying have anything to do with brachiation, a lot of us still aren't down from the trees. There are odd parallels between treetop life and grassland life. One sees far, there are bright flowers and fruits near at hand. Brachiating and running seem like mirror activities, with hominid legs taking on the swinging motions of ape arms. We spend most of our lives climbing around in wooden boxes, as though our real aspiration is to reascend into the treetops. ■

David Rains Wallace *is a natural-history writer in Oakland, California. His books include* The Klamath Knot *and* The Turquoise Dragon. *These excerpts are from* Bulow Hammock: Mind in a Forest, *published by Sierra Club Books this spring.*

DAVID MUENCH

A PORTFOLIO

GLANCE AT ONE OF DAVID MUENCH'S PHOTOGRAPHS AND you can't help but notice the colors: eye-piercing shades of blue, brilliant greens, and warm ambers. Whether it's a shot of sagebrush and unusual rock formations in California's Mojave Desert or one of wildflowers in the Texas hill country, Muench's moody and sensual landscapes offer a dose of color so spectacular that even a master painter might have trouble creating such a scene.

BONNIE MUENCH

Yet Muench, one of today's premier nature photographers, matter-of-factly admits that he is more interested in form than in color. "I often picture things in black and white," he says. "I love monotones and liquid light. And that's exactly how I compose."

During the past quarter century, Muench's photographs have appeared in some 30 art books, on the covers of magazines, in calendars, and on posters. He has also been commissioned to create displays for national parks and monuments. Through it all, his personal views of the American landscape have resulted in images as paradoxical as his style: a photograph of Death Valley's Mesquite Flat dunes offers a glowing, softly contoured swath of sand amid harsh mountains; another image displays tender saxifrage flowers blooming through July snow in Colorado's San Juan range.

"Unfortunately," Muench says, "we have gotten our idea of what a photograph is supposed to be as a result of the typical European image: the one-third-sky and two-thirds-land shot. I have consciously decided to approach things in a completely different way. The small things are the most important part of the bigger picture. The contrast and tension between all the different elements in a scene is what is interesting and important to me."

Muench, who lives in Santa Barbara, California, has had ample opportunity to define his interests. He estimates that since he began working professionally some 25 years ago, he has created between 200,000 and 300,000 photographs. Every year he journeys to the wilderness five or six times—sometimes for as long as eight weeks—to seek out and photograph the primeval, the untamed, and the unspoiled.

Traveling by four-wheel-drive vehicle, he takes his 4 x 5 Linhof and a 35mm Leicaflex everywhere—even if that means toting the bulky 4 x 5 to the top of a mountain or across a raging creek. He carries a wide variety of lenses, ranging from 15mm to 800mm for the 35mm camera and 45mm to 800mm for the 4 x 5. "The idea is to extend my eye," he explains, "to take in a wide range. I need wide parameters."

Often Muench will backpack into remote canyons and spend two or three days "becoming part of the environment and watching everything that happens. You can't dayhike into a place and try to take photographs within a couple of hours," he says. "It's the second day, when you have the early-morning and evening light, when the weather moves in, that things get really exciting." In order to capture the full range of seasons, as well as light and mood, he usually visits an area several times. "I need a patchwork of all of them to satisfy my creative urge," he says.

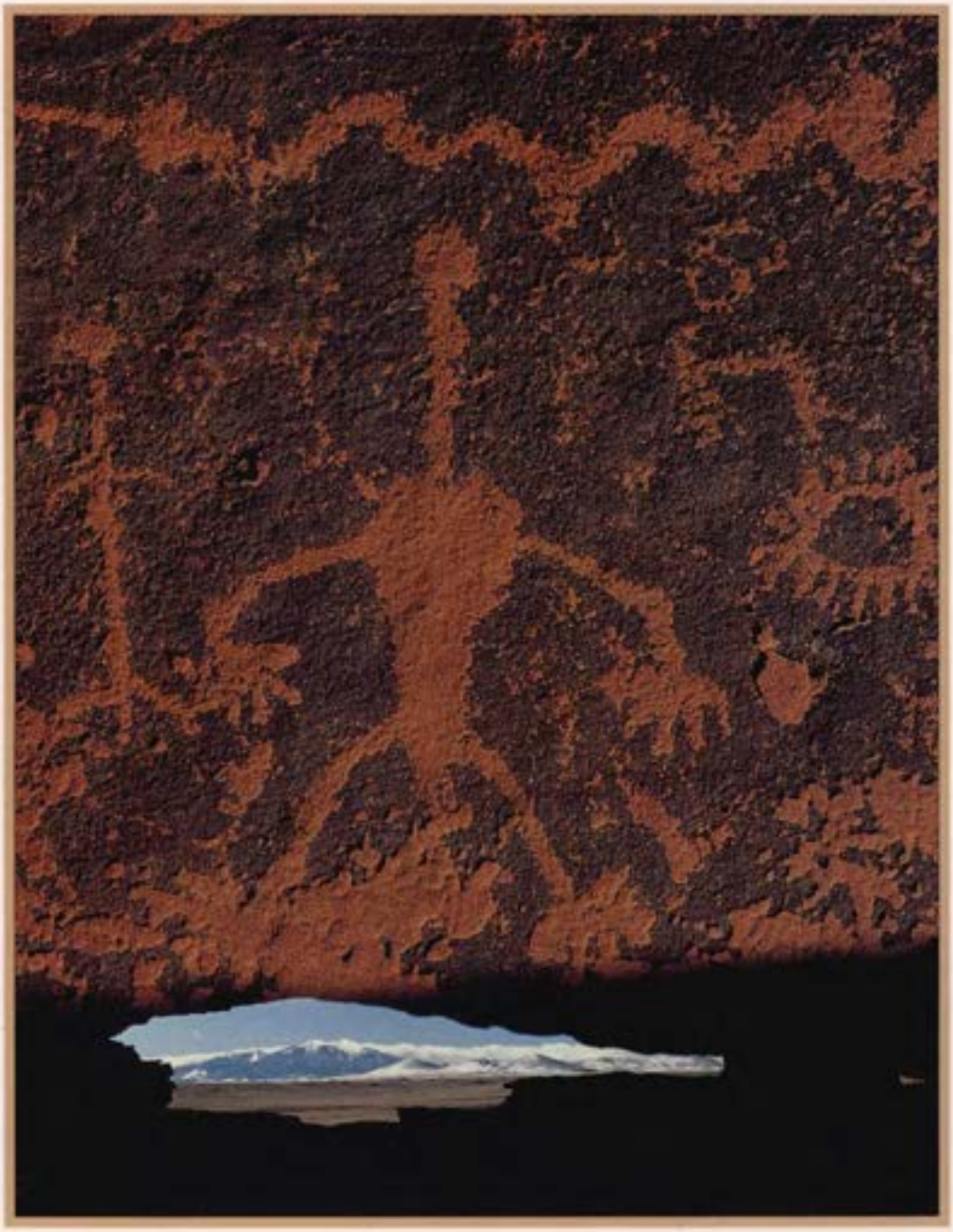
Muench spends a good deal of time preparing for his trips. Long before he travels to a location, he studies various maps of the area, especially detailed topographic maps. "I try to get to the point where I can pre-visualize what I want to photograph. Then I leave things open and look for surprises," he says. "I scout things out and explore and experiment." In the field that can mean finding a perfect image within minutes or spending an entire day hiking around in search of the scene he has visualized.

While he has sometimes been tempted to photograph other parts of the world, Muench continually finds himself drawn to the American wilderness—the cloud forests of Hawaii, the redrock of Utah's canyonlands, Wyoming's Wind River Range, or the Rio Grande along the Texas/Mexico border.

"I am not vocal and I do not have an eloquent tongue," he says. "Photography is how I express my love for the landscape and for the conservation of nature. I have always needed that personal direction in my photography."

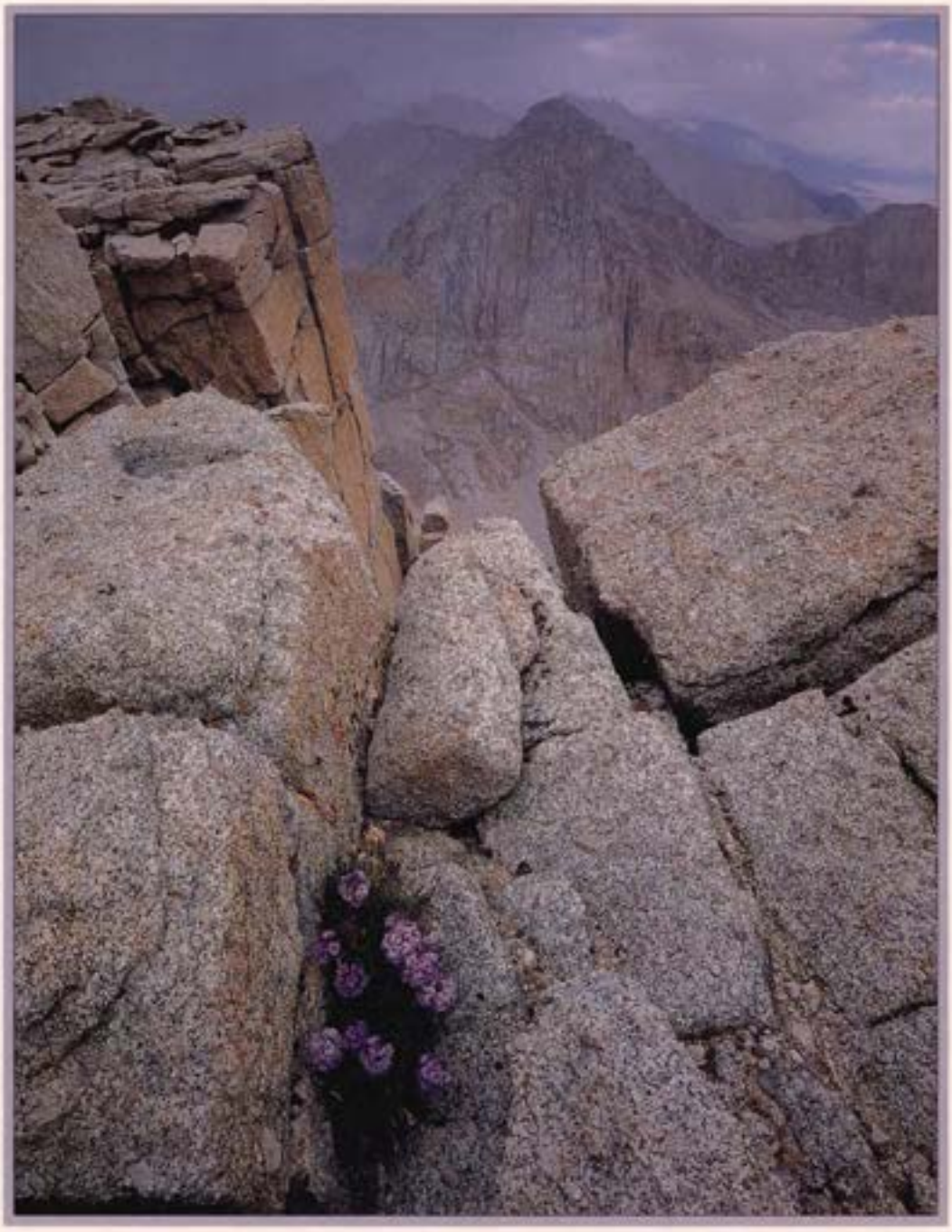
Introduction by Samuel Greengard ♦ Captions by David Muench

PETROGLYPH AND SAN FRANCISCO PEAKS, ARIZONA, SPRING 1978. By photographing the Kachina Peaks (more commonly known as the San Francisco Peaks) and a petroglyph, I've created a double image here. The Kachina Peaks are considered sacred by the Navajo and the Hopi Indians of the region, and the Anasazi petroglyph in the foreground signifies the Indians' mythical world. Here I've juxtaposed the two, setting the figures etched in sandstone against the volcanic peaks to relate their spirituality.

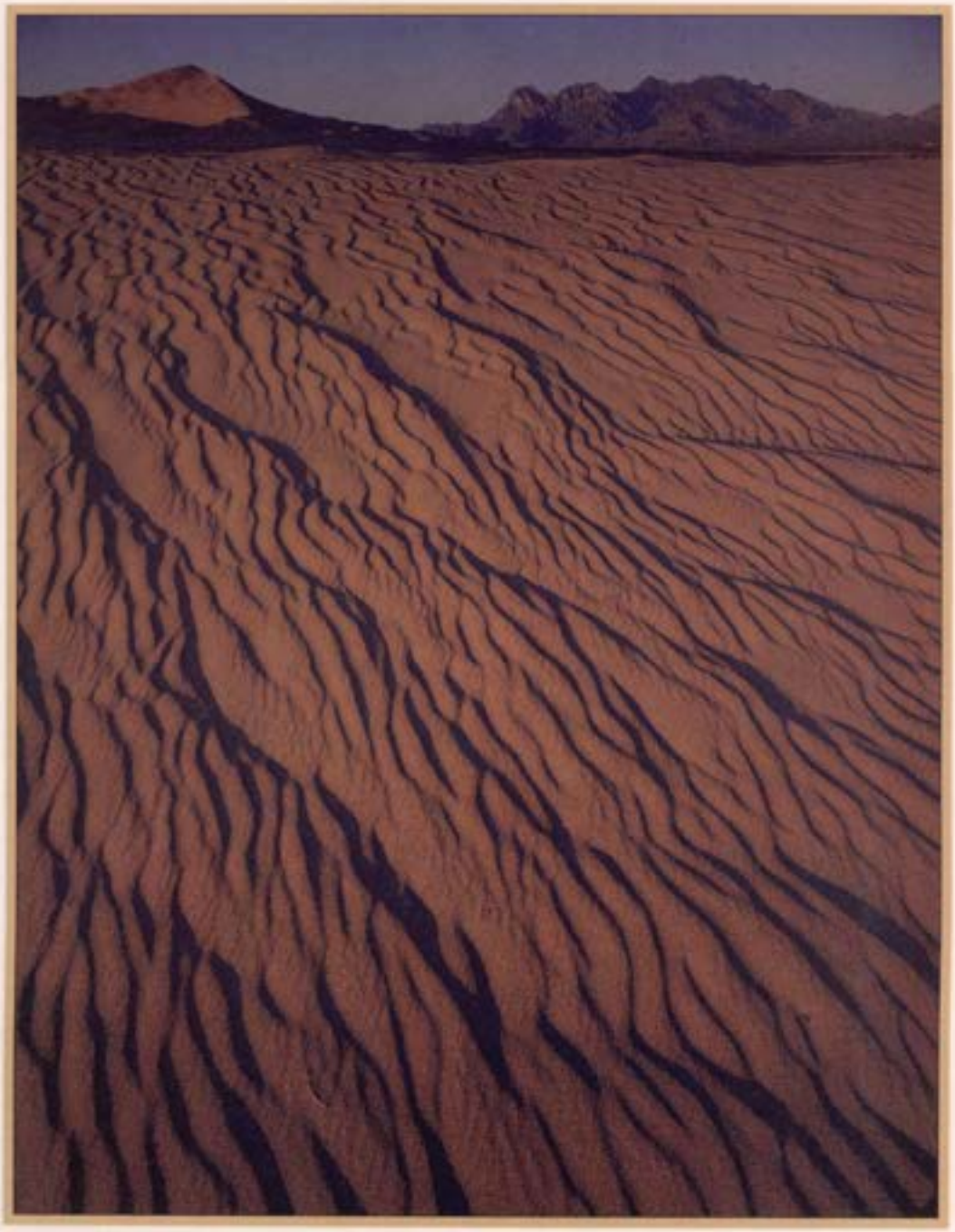


YUCCA PLANT AT WHITE SANDS NATIONAL MONUMENT, NEW MEXICO, SPRING 1985. The simplicity of White Sands, with its spacious desert quality, fascinates me. I made this photograph in the evening, when the sand reflected the blue of the sky; that tone contrasts with the overall monotone of the desert. In the middistance you see a lone yucca, the identifying element that gives a focal point to the scene. Yet it's a small feature; too much emphasis on detail can sterilize one's impressions of a landscape. Here the mystery and awe are intact.

SKY PILOT IN GRANITE TOPROCK OF MT. LANGLEY, SIERRA NEVADA, SEPTEMBER 1988. Reacting to the fragile beauty of the sky pilot in the foreground, I photographed the flower against this rocky environment, contrasting delicacy with strength. Mount Whitney looms on the crest to the north, and the flower is on the edge between the John Muir Wilderness to the right and Sequoia National Park to the left. This photograph was made in early evening, during the light snow of a summer storm, which adds an opposing sense of drama.



KELSO DUNES, MOJAVE DESERT, CALIFORNIA, APRIL 1986. The beauty, the power, and the wildness of these dunes, located in the heart of a proposed new national park, are alluring. In winter the ripples of sand are deeply furrowed; in summer they are finer. This photograph, made between the seasons, shows ripples similar to those of winter, but having shorter strokes. The sense of aloneness—not loneliness—is captivating; the silence, space, and stark tones of the desert are compelling and mysterious.

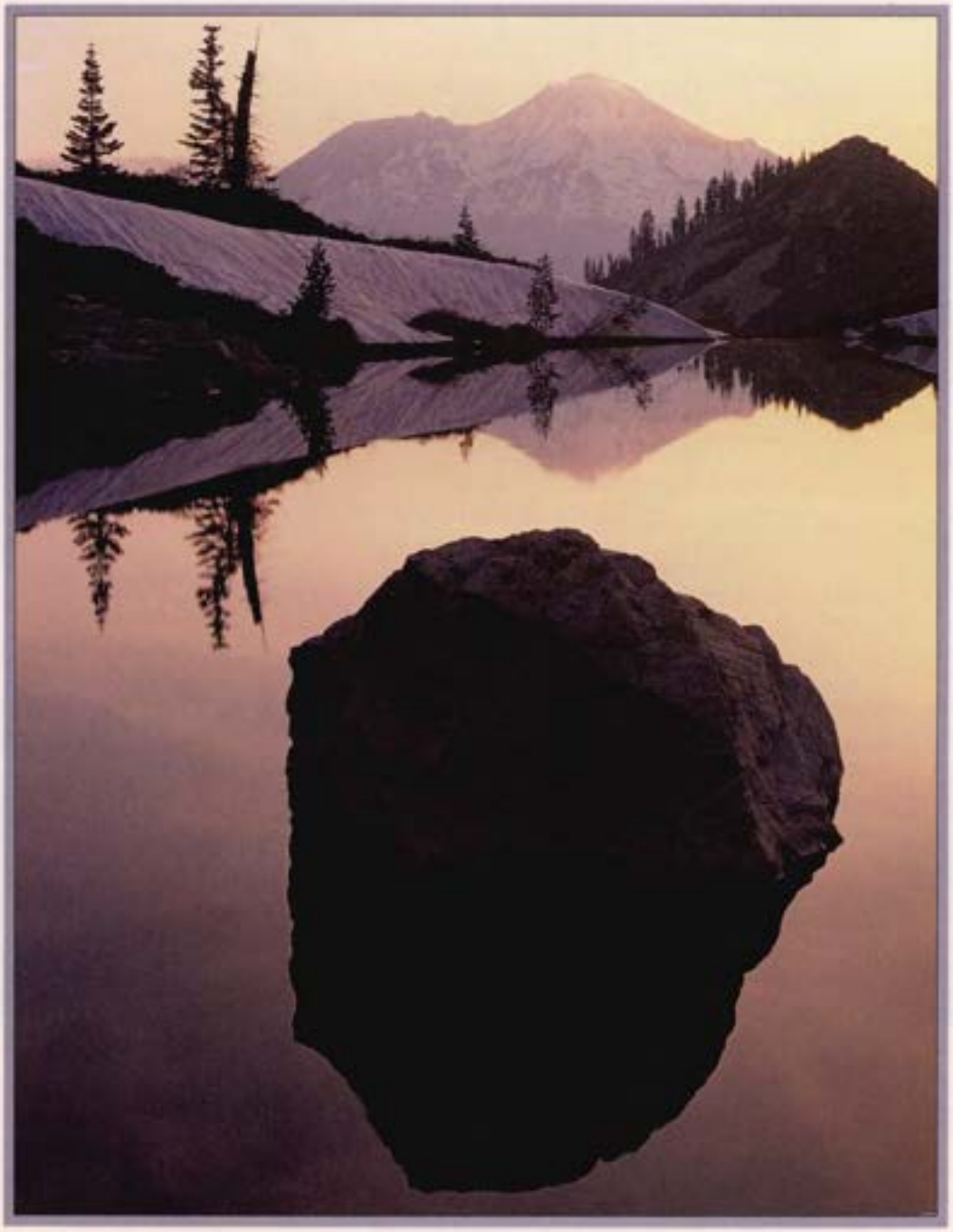


LOWER CALF CREEK FALLS, ESCALANTE CANYONS, UTAH, OCTOBER 1987. I find the design of these falls on Navajo sandstone amazing. I particularly like the blue tones and the green algae on the rocks. This is an example of the opposites that intrigue me: The deep colors and flowing water contrast with the generally dry, barren slickrock. While the colors appear artificial, they are natural. I feel strongly about working with natural beauty, making the film record what I see here and not using filters to create something new.

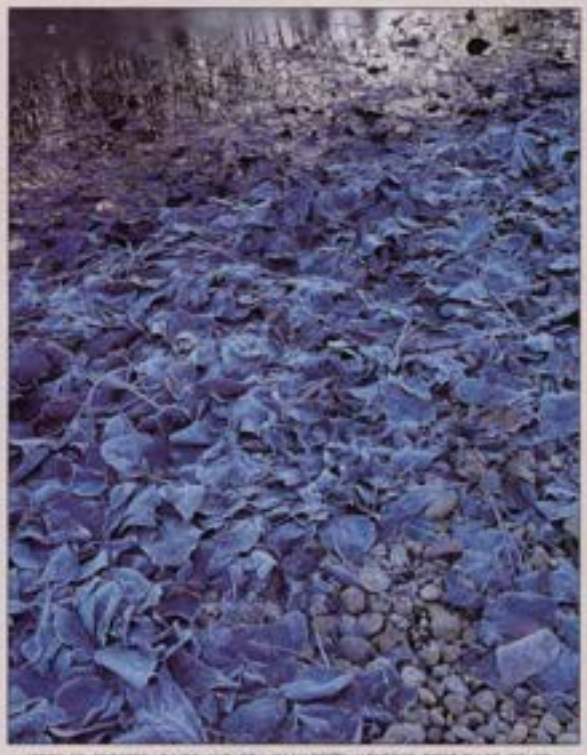
SILVERSWORD, HALEAKALA NATIONAL PARK, MAUI, HAWAII, MARCH 1988. A young silversword plant, prominent in the foreground, contrasts with the stark, volcanic environment of Haleakala. I am always working with the mystery of the landscape and with the essence of place—in a whole ecological sense—rather than simply compiling pretty elements. In this photograph, taken at about 9,000 feet, you see cinder cones, the last vestiges of volcanic action, surrounding the silversword. This unique plant is unusual in that it has adjusted to a stark, exposed environment on the windswept slopes of the volcano. A rainbow has just emerged, emblem of the daily showers on Maui.

SANDSTONE FORMS, SALT POINT STATE PARK, CALIFORNIA, WINTER 1985.
I am particularly attracted to the California and Oregon coasts because of the abstract forms found in their ocean-washed cliffs. Again I am making a personal statement by reacting to the design in the stone and the action of waves on exposed rock. At the same time, the light is soft, ambient; there is no direct sunlight. I often prefer working with this quality of light because it enhances the tones and forms of the landscape.

MOUNT SHASTA, CASCADE RANGE, CALIFORNIA, MAY 1987. The peaks of the Cascade Range are prominent and strong, and the reflection in the water suggests that the area is very much alive. Reflections are fascinating to me. By mirroring a landscape, they double its strength and serenity. This photo was made at dawn; I prefer working early or late in the day, just before sunrise or shortly after sunset. Those are transient moments, edges between times of day that bring out a tonal depth and subtlety of landform. ■



10TH ANNUAL SIERRA PHOTO CONTEST



"PEBBLES, FROSTED LEAVES, AND ICE," JIM MAROTTA-JAENICKE. FIRST PLACE (COLOR), "THE MEETING OF LAND AND WATER," 1988

For nine years *Sierra*, the national magazine of the Sierra Club, has celebrated the art of photography through an annual contest. Each year the submissions get better and better; we anticipate that our tenth contest will bring in some truly stellar entries. The winning photos will be published in *Sierra*'s September/October issue, then mounted and displayed for a year at the Sierra Club's headquarters in San Francisco.

Prizes

■ Grand Prize: A Nikon N4004S 35mm SLR camera with an AF Zoom-Nikkor 35-70mm f/3.3-4.5 lens *and* a versatile all-terrain bike, the Iguana, from Giant Bicycle.

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■ Eight second prizes (awarded for the winning black-and-white *and* color photo in each category): a special-edition folding knife from Buck Knives.

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■ *Abstracts in Nature:* Focus on the form, symmetry, or asymmetry of natural objects.

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How to Enter

■ For contest rules and submission forms, write to *Sierra* Photo Contest, 730 Polk St., San Francisco, CA 94109. No phone calls, please. Entry deadline is June 1. Do not send photos until you receive the materials.

Eligibility

■ The contest is open to all amateur and professional photographers. Sierra Club staff, their immediate families, and suppliers to *Sierra* are not eligible. Previously published work, photos pending publication, or photos that have won other contests are not eligible. Void where prohibited.

NO NATION

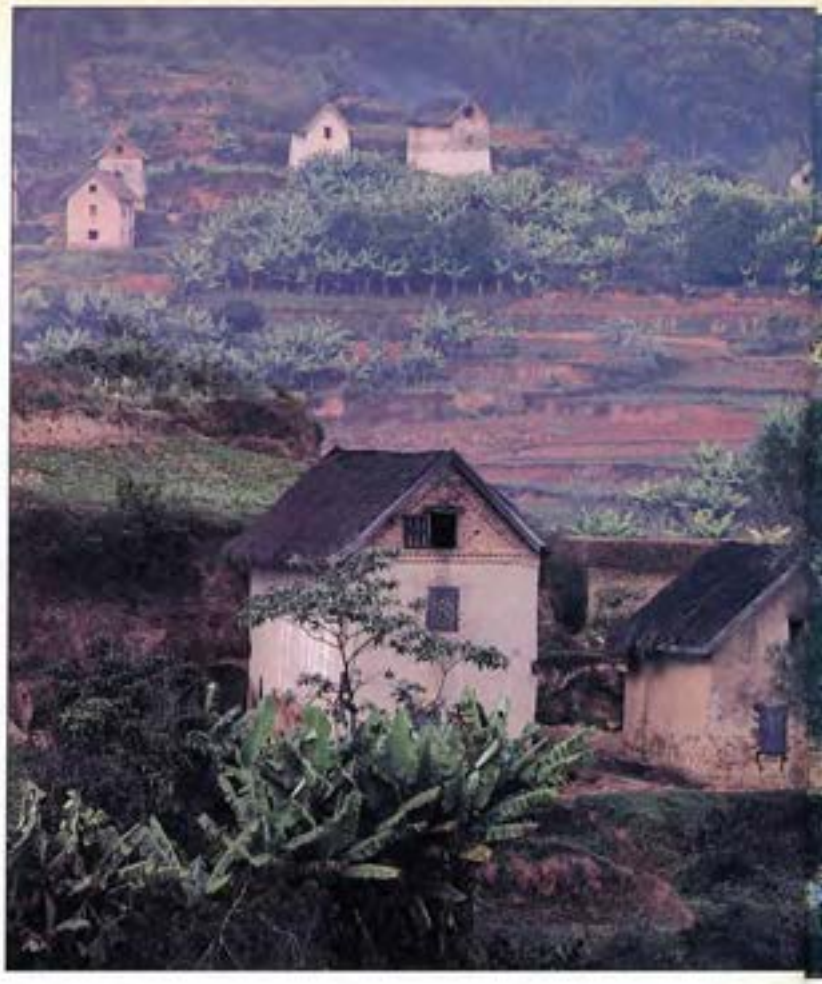
PHOTOGRAPHS BY FRANS LANTING

AN ISLAND

The world has much to lose in Madagascar, where human poverty grinds away at nature's plenty.

BY MARGARET L. KNOX

The pace of life in Madagascar's cities has quickened in the last decade (below), but 80 percent of the nation's people still eke out a livelihood from the land.



WE BOARD THE SOUTH-bound train in the capital city of Antananarivo and chug away from the ornate French-built railway station. Sitting on low wooden seats we watch the rice paddies appear and disappear among the eroded, desolate hills.

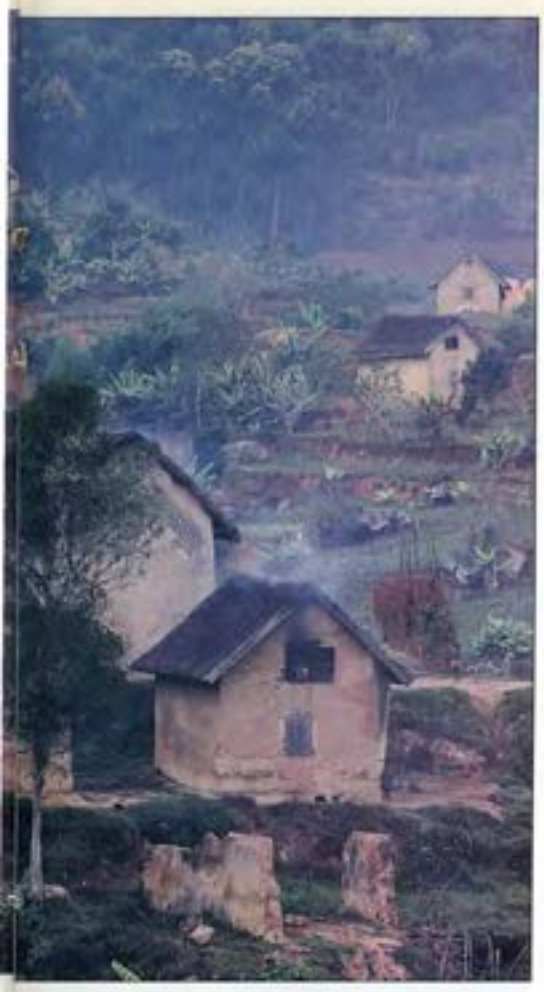
Six hours later my husband and I reach the end of the line, the old colonial town of Antsirabe, a once-thriving hot-springs resort. Scores of rickshaw drivers descend on us as we emerge from the depot, ramming into each other's gaily painted vehicles, screeching for business. The ride across town to the *taxi-brousse* (bush-taxi) takes only minutes, our wiry, emaciated driver running on bare feet over Antsirabe's cracked and shattered pavement.

The *taxi-brousse*, usually an old Peugeot station wagon held together with baling wire and running on homemade spark plugs, is a monument to both the extreme poverty and the extreme resourcefulness of the Malagasy people. Like the island's 11 million inhabitants, the taxis seem kept alive by a combination of folk wisdom, practicality, and sheer determination. Only recently—and reluctantly—have those conservationist tendencies been applied to the natural world as well.

En route to the Ranomafana rainforest, site of a proposed national park, we cover the next sixty miles in five hours. The leisurely pace includes frequent stops, and sightseeing is a pleasure when live chickens are not strutting across my lap. We pass two-story stucco houses with balconies, carved wooden eaves, and thick thatched roofs that look from a distance more like a scene in the Rhine Valley than either an African or Asian tableau. But to enter one of the homes is to be engulfed in the gloom of walls and ceilings blackened by cook-fires constructed in the middle of a hay-covered floor.

Next morning, one of the taxi's spark plugs explodes. Although the driver successfully repairs the damage with a strip of old oil can and a chunk of wood, we abandon the taxi and hitch a ride in a miniature Renault. In relative comfort we watch the olive-and-gold countryside plunge into a series of deep, terraced valleys. Only an occasional copse of trees graces the landscape. "*Charbon*," an old man explains as he leans on his long-handled ax at the edge of a blazing field. Charcoal. At another stop we see three men atop an ingenious ten-foot-tall scaffold, rhythmically reducing a huge palisander tree to planks with a long crosscut saw.

On the third day, packed into another taxi, we enter the Ranomafana rainforest. Moist winds off the Indian Ocean have created a tropical greenhouse on these hillsides; fan-shaped traveler's palms, giant bamboo, and rosewood trees lean high over the road. But those who have explored the area recently say all that is left of a once-extensive virgin rainforest is a narrow ribbon 15 miles wide that clings pre-



cariously to the steepest slopes.

As in much of the tropics, the people living in the Ranomafana rainforest of southeastern Madagascar are the forest's worst enemy, slashing and burning huge swaths of trees to clear land for crops. Plowing the soil would help them raise more food on a single plot of land and let them stop roaming so destructively through the forest, but just teaching people to plow is not the answer here. For the people of Ranomafana, plowing is taboo because it turns the earth's back on God.

SUCH IS SURVIVAL ON THE PLANet's fourth-largest island, which is neither Africa nor Asia but a world unto itself. At the turn of the century, at least a quarter of Madagascar was forested; now half that is gone, most of the countryside exposed to the baking sun and gouging rain. As the forest goes, so goes the habitat of the sucker-footed bat, the tailless tenrec, the black lemur, and more than 10,000 other species of plants and animals found nowhere else on Earth.

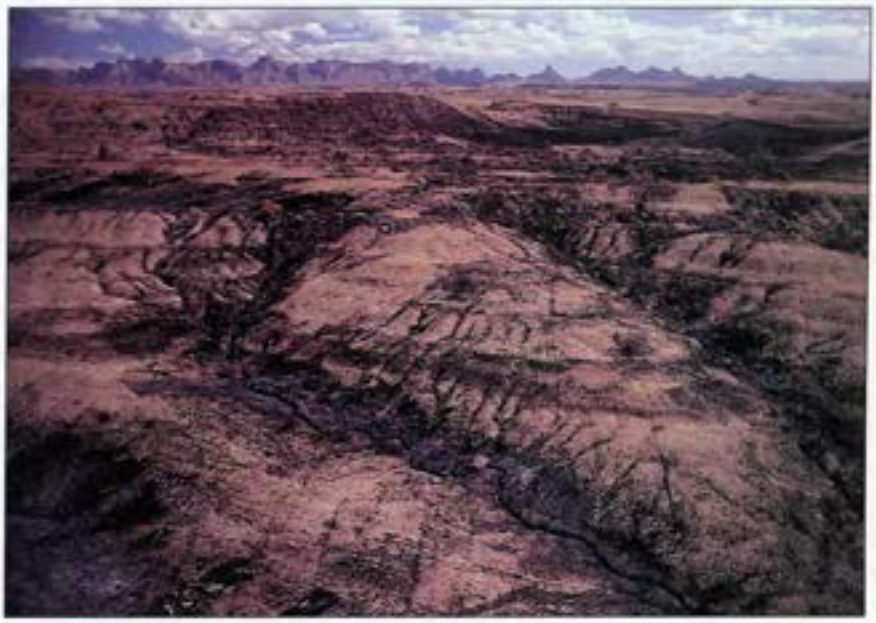
This minicontinent 250 miles off the coast of Mozambique contains a spectrum of environments ranging from steamy eastern rainforests to lip-cracking southern deserts, to a high central plateau so cold at night that people trundle around in heavy wool blankets like Andean shepherds.

Madagascar's singular ecology, geologists believe, is a consequence of the island's break with mainland Africa some 165 million years ago. Cast adrift before the appearance of mammals, Madagascar was removed from the evolutionary processes that brought elephants, monkeys, and large carnivores to the rest of Africa.

The same isolation that allowed nature its peculiar botanic and zoologic experiments fostered an intricate human society whose very complexity has serious repercussions for conservation efforts. One theory holds that Madagascar was uninhabited by humans until about the sixth century, when Indonesian seafarers inching westward along the Indian Ocean's northern coast floated ashore and settled in the cool highlands, where their almond-eyed, copper-skinned descendants still live. At about the same time, African fishermen crossed the Mozambique Channel, establishing the forerunners of today's black-skinned societies along the coasts. Both groups splintered into tribes and subtribes, with almost incomprehensible caste systems overlaying all.

To this day taboos may differ among tribes, among families within tribes, even among individuals within families. To some people seven is a disastrous number. Others cannot live north of their family tombs or collect firewood from a burial ground. Many worship the dead and periodically dig up the bones of their ancestors, rewrap them in bright clothes, and rebury them. For many Malagasy, lemurs are protected

The price of kerosene is beyond the budget of most Malagasy, who turn to trees as a source of charcoal (right). The ceaseless search for such necessities has dramatically disfigured the landscape.



Ritual funeral dances and elaborately decorated grave sites (left and above) are but two of the ways Malagasy show reverence for the dead.

Like the nation's human inhabitants, Madagascar's flora have adapted to harsh conditions. The octopus tree and bottle tree (near and far right) store water to see them through the many arid months, and *Kalanchoe gastonis bonieri* (below), a succulent endemic to Madagascar, thrives in a jungle of limestone needles.

by powerful taboo, or *fady*. But others believe that the skeletal middle finger of the aye-aye lemur is a symbol of death, and kill the night-prowling creature out of fear.

Conservationists are beginning to learn that any environmental plan that ignores *fady* is bound to falter. An agricultural cooperative funded by the United Nations Development Programme (UNDP) failed recently because the managers had not understood the locality's ancient rules of land ownership, according to Ronald des Jardins, who directed the UNDP environmental project in Madagascar for three years. "The paper deeds we held were meaningless," he said.

In the north, des Jardins encountered shrinking cycles of slash-and-burn, called *tavy*. Whereas in the first half of the century families returned to a plot every fifteen years, population pressure now forces them back every three, leaving no time for the ground to rest. The solution seemed deceptively simple to des Jardins. "We spent a lot of time demonstrating sustainable, high-yield techniques," he said. "But the people thought, 'Why bother? The old ways are fine.'" His advice to his successors: "Try to understand the Malagasy's relationship with the forest and the soil."

But des Jardins' successors will have to learn quickly. Deforestation could send animals like the lemur, of which 28 species remain, the way of the 10-foot-tall elephant ostrich and the the pygmy hippo, long since hunted to extinction.

Whether it manifests itself in the *tavy*-plagued forests or in the spiny desert, where endemic plants are burned for charcoal, Madagascar's ecological crisis reflects the struggle of its people to survive. Those Malagasy lucky enough to have a job earn on average the equivalent of 65 U.S. cents a day. Most are subsistence farmers scraping a living off an exhausted island whose population has doubled since 1950.

Despite its crippling poverty, Madagascar has managed to set aside two national parks and thirty-four nature reserves, the latter open only to scientific researchers. And in the remains of the Ranomafana rainforest in 1986, a West German biologist named Bernhard Meier discovered a new species of primate, the golden bamboo lemur. His find helped launch the effort to create Madagascar's third national park.

AN AMERICAN COLLEAGUE OF Meier's, Duke University behavioral ecologist Patricia Wright, has set up a research camp at the edge of the rainforest, a sticky and tortuously steep hike up from the highway. When I come puffing and wheezing into its midst, Wright is away in Antananarivo, but her small group of college-age American researchers share their watermelon break-

fast with me and explain their work.

Most of the group trace the migration and feeding habits of the lemurs. Sabrina Paine, an anthropology graduate student from the University of Massachusetts, is studying how to protect the proposed 120,000-acre park from the people who live here. Paine explains how she has held meetings with the locals to learn what they get from the forest and what they would need to survive if, as would be the case should the park be established, logging and *tavy* were no longer available to them. "If we don't come up with a development program to soften this loss for the people, rules restricting access to the forest will be unenforceable," she says.

The people of Ranomafana have told her that they want paying jobs, better health care, potable water, and alternative fuels. The researchers have offered to help restore wrecked and overgrown rice paddies if the farmers will stop cutting trees for new ones, and have discussed plans to replant some eroded slopes with fruit trees. But, Paine concedes, agricultural practices will be hard to change among people who consider the plow an affront to God.

Shortly after our return from the Ranomafana, I have the opportunity to see how, in one nature reserve, the loss of the old ways has been softened. Just before leaving Madagascar, I share a train coach east from the capital with a handful of European tourists. We get off halfway down the vast eastern escarpment at a depot hotel in the tiny town of Andasibe. Several years ago, the government set aside 325 acres of eucalyptus forest near Andasibe for the remaining families of the largest species of lemur, the black-and-white indri, whose long limbs make it seem much bigger than its average 20 pounds. Today, half a dozen locally recruited rangers in drab-green uniforms guard the entrances to the reserve, and local guides like the eager,

moon-faced Laurette Nirina lead dawn excursions into the damp forest, struggling to find the French words to answer visitors' questions.

By 6 a.m., Nirina finds a sleeping indri family. Two and a half hours later we are still shivering in the dripping woods, waiting for the animals to stir. Finally sunlight creeps down the soaring eucalyptus crowns, and when it touches the lemurs they begin leaping around the forest canopy, bending spindly trees nearly to the ground as they scramble overhead. From far away a bizarre shriek rises, sweeping across the forest toward us until it is taken up by "our" indri family at an ear-splitting level. The primates' eerie wake-up cries sound to us somewhat like a whale accompanied by a creaky hinge.

The residents of Andasibe village never hunted the indri, Nirina tells us. They call it *babakoto*, which means "little grandfather." They did, however, harvest its habitat for firewood. In exchange for agreeing to leave a few acres of the forest untouched, a small number of villagers were given jobs as rangers or private guides.

"We no longer cut the trees in the reserve at all," Nirina says. "We have a residential forest nearby where we can cut trees, but even there we have been taught to take only dead branches. And the indri's home—we don't touch it!"

BACK IN THE CAPITAL, I SEEK OUT people who might explain the government's growing environmental enlightenment. For a decade ending in the early 1980s, Madagascar was virtually cut off from the rest of the world. The Malagasy had long resented their former French colonizers, but the post-independence government did little to shake off French influence. In 1972 nationalist sentiment climaxed in a coup. Soon after, the new president, Didier Ratsiraka, expelled hundreds of French in key government and management positions and terminated contact with most Western aid agencies.

"Until 1982 or 1983 it was impossible to get foreign consultants in here," says Christine Kimes, a World Bank economist. "The green revolution bypassed Madagascar."

Dwelling unnoticed in the Ranomafana rainforest for millennia, the golden bamboo lemur was "discovered" by Western scientists in 1986.

One man who carried the conservation banner during the isolated years is a spry, precise, silver-haired Malagasy schoolteacher named Barthelemi Vaohita. When he finally gained permission to open an office for the World Wildlife Fund in 1979, Vaohita found the government still wasn't very interested in problems that seemed so remote.

"They said conservation was a problem for developed countries," Vaohita tells me. "For eight years I worked to convince them that as an agricultural country, Madagascar could well follow Ethiopia. I made them see that when the forest is finished, *we're* finished."

Other forces were working to soften the government's resistance to Western donor agencies and research groups. Severe rice shortages and a serious challenge to his presidency in 1982 reportedly shook Ratsiraka into action. He appealed for a line of credit with the International Monetary Fund; after several tries, the nation qualified in 1983. That opened the door to economists like Kimes, as well as to agricultural and environmental experts like des Jardins, who picked up on Vaohita's themes.

But it was only a year ago that Vaohita gained access to radio airwaves so tightly controlled by the government that opposition parliament members cannot use them. When primary schools opened last October, an ecology course designed by Vaohita and the World Wildlife Fund was a required part of the curriculum.

A flood of researchers and technical advisers has followed the government's recent policy of *ouverture* to the West. The World Bank has granted a $7-million loan for the "management and protection" of forests, says Kimes. Through the Biological Diversity Preservation Act, passed in 1986 with the help of the Sierra Club, the U.S. Agency for International Development has committed $350,000 to four conservation projects on the island this year.

Madagascar's city people feel the *ouverture* too: Gleaming bottles of cooking oil, tubes of Colgate toothpaste, Peugeot drive shafts, and other imported goods are now stacked amid quacking ducks and aromatic vanilla beans in Antananarivo's chaotic outdoor market.

But the open door could swing back on environmental efforts. Desperately strapped for foreign income, President Ratsiraka is under pressure to put lucre ahead of lemurs. A subsidiary of British Petroleum is surveying a titanium deposit that, if exploited, could erase the nation's $30-million annual trade deficit. The titanium, however, is in one of the island's last virgin forests.

"If the international community thinks that Madagascar's flora and fauna are so unusual, is it willing to create a fund to compensate Madagascar for the lost revenue?" asks Kimes. "It's not fair to point the finger and say, 'You're a bad government'—not when the people are so poor."

Her words remind me of the ragged young boy in the shadeless coastal town of Toliaro who whistled at my husband one morning and held out what appeared to be a stone. It was a radiated tortoise, a rare and endangered species; he wanted to sell it to us for the equivalent of 35 U.S. cents.

I asked him the word for the tortoise. "*Tsakafy*," the boy hissed—a variant of the Malagasy word for food. ■

MARGARET L. KNOX *is an American writer living in Harare, Zimbabwe.*

Sierra Club Third International Assembly

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The Grand Plans of Congressman Udall

Joseph A. Davis

"THERE ARE NO final victories in the conservation movement," says Mo Udall. "You have to keep making the fight."

Morris King Udall follows his own advice. As the 66-year-old chair of the House Interior Committee surveys issues before the 101st Congress, he ticks off his objectives: Set up a new fund for parkland acquisition, work toward completion of the country's wilderness system, save the Arctic National Wildlife Refuge from oil drilling. The Arizona Democrat plans on a grand scale—but that's nothing new for a man whose past pursuits include gigantic water projects, vast wilderness areas, and a run for the presidency.

"Mo is a really big man in every sense," says John Seiberling, the former Ohio representative who chaired the Interior Committee's Public Lands Subcommittee. A 6'5" former athlete, Udall is a bit stooped by arthritis now. But his big-heartedness and generosity remain undiminished.

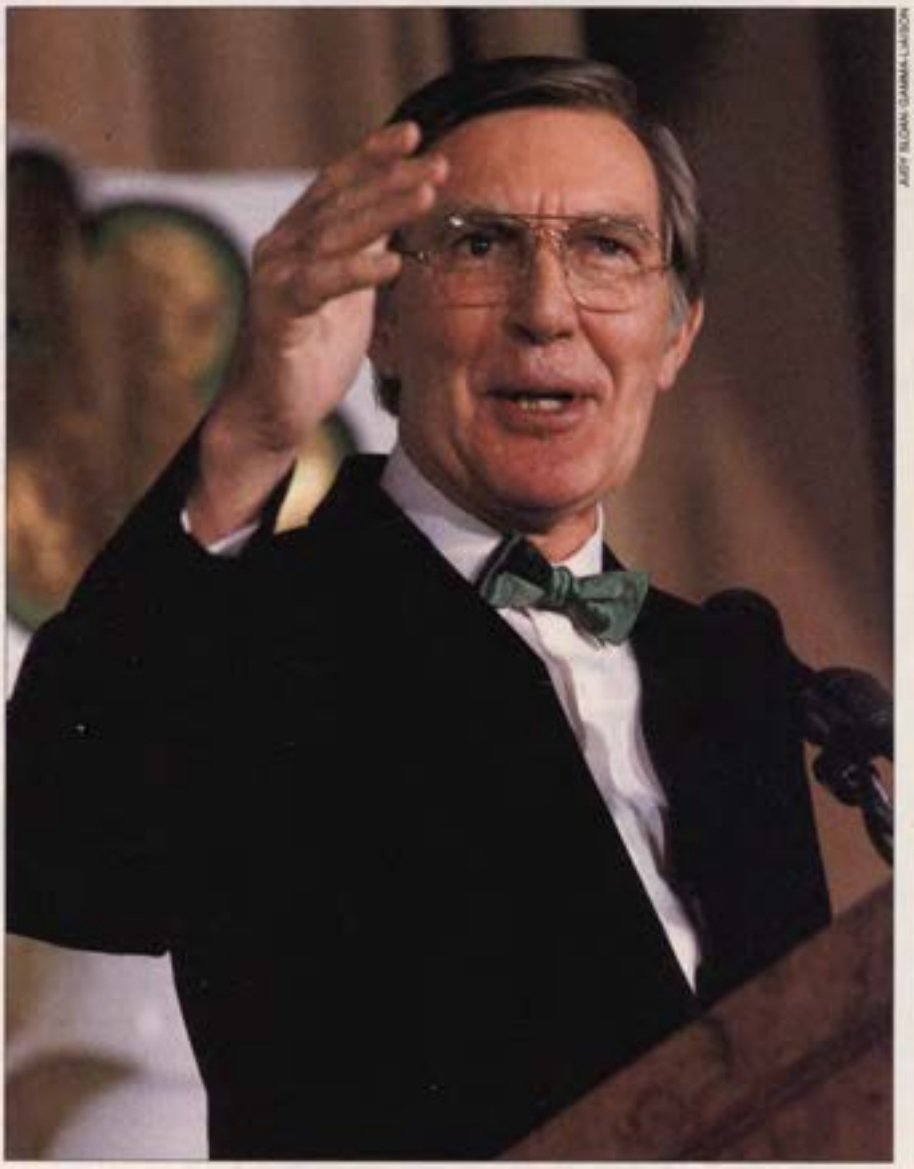
"I've found Mo to be very kind and very fair," says Interior Secretary Manuel Lujan, Jr., who has worked with Udall in Washington for 20 years. Colleagues consistently speak of him with respect and affection, describing him as unpretentious, down-to-earth, and a good listener.

They also emphasize his good humor, an attribute that distinguishes Udall from some of the other powerful members of Congress. While another committee chair keeps a black book to remind him of people who have voted against him, Udall keeps a bigger black book full of jokes. "Good politics and good humor are often inextricably intertwined," he wrote in *Too Funny to Be President* (Henry Holt, 1988), a combination of humorous anecdotes and personal memoir.

Udall's sense of humor and low-key delivery make people laugh, win him speaking invitations, and help dissolve the bitterness that frequently poisons political dialogue. At committee meetings he sometimes recites what he calls the politician's prayer: "Lord, give us the wisdom to utter words that are gentle and tender, for tomorrow we may have to eat them."

Behind this good humor, though, is a shrewd and tough-minded man, some veteran staff and lobbyists say—and Udall is too politically savvy to be taken advantage of often. During James Watt's early months as Ronald Reagan's Interior Secretary, for example, Udall treated him politely. But when Watt bragged in August 1981 that he had gotten control of Udall by threatening to halt construction of the aqueduct needed to bring water to Udall's Tucson district,

"After the insurgency succeeds, you must govern. Conservation is no sport for the short-winded." —Morris K. Udall



JUDY SLOAN/GAMMA-LIAISON

the congressman called for Watt's resignation.

"I'm a nice guy, but I have a boiling point," Udall said at the time. "Secretary Watt apparently confuses civility and common courtesy with weakness."

Still, Udall's reputation as a compromiser is well deserved. The Sierra Club's Southwest representative, Rob Smith, says the congressman doesn't follow the common practice of starting negotiations with an extreme position, then bargaining some of it away. Instead Udall "seeks to make the compromise before he introduces the bill," Smith says. "You may end up in the same place, only everyone isn't as angry."

Udall was born into politics. In 1880 his paternal grandfather, David King Udall, then 29, led 50 Mormon pioneers from Salt Lake City to found the small town of St. Johns in southern Arizona. Later his father, Levi S. Udall, served as chief justice of the Arizona Supreme Court. One brother, Stewart, was Interior Secretary under President Kennedy.

Mo Udall has parted ways with the Mormon Church, but his grandfather's struggle to survive in the hot, arid town of St. Johns helped instill in him an appreciation for the land. "Be good to the ground," Grandfather Udall once told his family. "It is holy. It is origin, possession, sustenance, and destiny."

"In their way," Mo Udall wrote in his book, his Mormon ancestors "were also environmentalists. They understood the critical importance of taking care of the land that sustained them."

When Udall was a boy of six, he lost an eye in an accident while playing with a friend. Nevertheless, he went on to play college basketball and then to tour for a year with the National Basketball League's Denver Nuggets while completing his law degree. He also managed to get into the Army during World War II, serving as a noncombat pilot in the Pacific.

After earning his law degree from the University of Arizona in 1949, Udall entered private practice with his brother Stewart; by 1953 he had been elected county attorney for Pima County, a position he held for two years. A crack legal scholar, in 1960 he authored *Arizona Law of Evidence*, a standard reference work. When Stewart vacated Ari-

zona's Second District congressional seat to become Interior Secretary, Mo won it narrowly by a special election in May 1961.

Throughout his first decade in the House, Mo Udall was a reformer. In addition to serving on the Interior Committee, he was appointed to the Post Office and Civil Service Committee, where he played major roles in overhauling the civil service, the Post Office, and (at the height of Watergate) campaign finance. In October 1967 he was among the first members of Congress to oppose the Vietnam War, breaking with the Johnson administration in a key act of self-definition.

One of the liberal Young Turks of that era, Udall often challenged congressional procedures and institutions in the 1960s and '70s. Building his skills as a floor leader, he developed his own informal "whip" network for counting and delivering votes. In 1969 he demonstrated his disregard for the seniority system by running for the job of Speaker against the aging John McCormack (D-Mass.), whom he viewed as too conservative and cautious. Although he lost that fight, the challenge spurred fellow representatives to express their discontent with McCormack and with the seniority system that had automatically handed him the leadership role. Taking on the establishment two years later, Udall lost a bid for Majority Leader by a narrow margin. Though he was defeated in both races, his actions eventually led to reform of the seniority system within Congress.

To be sure, Udall has lost many battles, including a 1976 presidential bid in which he placed second in a string of primaries. But as in other cases, he turned the defeat to his benefit. Although he lost the nomination, he gained national attention and respect as a party unifier; he was asked in 1980 to give the keynote address at the Democratic Convention.

Udall has won the trust of others besides fellow party members: He has survived 15 elections in a predominantly Republican district. Through the years, he has balanced his own interests with the needs of his largely conservative constituents, working to resolve Indian conflicts and irrigation problems that concern them. "Like most western politicians, he's had to pledge allegiance to the local water project to stay in office," says the Sierra Club's Rob Smith.

One such development, the Central Arizona Project, has been a hot issue for Udall since early in his Capitol Hill career. In 1967 he debated the issue with then–Sierra Club Executive Director David Brower in front of the national media, on the very edge of the Grand Canyon. At the time, Udall was advocating the construction of two Colorado River dams (in Bridge and Marble canyons), which would have flooded much of the Grand Canyon. Even in his grandfather's day, the people of Arizona had depended heavily on irrigation dams for agriculture and survival, and in the '60s, Udall wrote in his book, "more than 90 percent of my constituents favored the [new] dams."

But Brower and the Sierra Club adamantly opposed the construction, and the debate sparked an expansion of the environmental movement that was to continue through the 1970s. To this day all plans to flood the Grand Canyon have failed.

After dropping the dams from the proposed legislation, Udall succeeded in winning approval for the Colorado River Basin Project Act in 1968. Because that bill authorized the gargantuan Central Arizona Project, it was a hit among his constituents. "Getting the CAP authorized had been the paramount issue in Arizona politics since I was a boy," he wrote in his book. "Grappling with the pros and cons brought me face to face with my heritage."

Today, Udall has learned to balance the short view of home-district politics with the necessarily longer view of conservation. "I was on the wrong side," he admits. "I can only thank God that the growing environmental movement outgunned those of us . . . who favored the dams."

Udall calls the Grand Canyon fight "a turning point in American history. From this time on," he wrote, "large reclamation and public-works projects would be subject to much closer scrutiny. For the short term, these reclamation projects have enabled the West to prosper. But how about the long term? What will our great-great-great-grand-

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children do once Lake Mead and Lake Powell fill with silt?"

Recently Udall has been working with the Sierra Club, not against it, to protect Grand Canyon and other national parks from low-altitude overflights. As chair of the Interior Committee, which controls Bureau of Reclamation water projects in the western states, he has used his power not only to bring economic benefits to Arizona but to help shift the reclamation program away from some of the environmentally damaging courses it has taken in the past. It was under his leadership that the Reclamation Reform Act of 1982—the most important overhaul of the Western Reclamation Water Act since its passage in 1902—reduced irrigation subsidies to farmers, thereby encouraging them to conserve water.

In carrying his conservation message to the presidential campaign of 1976, Udall called for the nation to face up to the interlocking issues of the "three E's"—environment, economy, and energy—and advocated "an ethic of conservation, of saving, of using everything to the maximum . . . an end to the ethic of waste, to the 'throwaway economy' that we have had for so many years when we thought our resources were never-ending."

Ironically, the congressional seniority system that Udall fought when he was young eventually brought him, in 1977, the chairmanship of the House Interior Committee. Since then, he has accumulated a long and weighty list of legislative achievements and overseen the addition of more land to the nation's parks, refuges, and wilderness system than any other congressional leader in U.S. history.

Perhaps Udall is most enthusiastic about the Alaska National Interest Lands Conservation Act (ANILCA), which protects more than 150 million acres of Alaska land. "Jimmy Carter signed this 410-page piece of paper," Udall says of the December 1980 White House ceremony, "and with one stroke of the pen, in one morning, he had doubled the National Park System, tripled the Wilderness Preservation System, and more than doubled the refuge acreage. That was real satisfaction."

Former Rep. Seiberling, who served

as chair of the Subcommittee on Alaska Lands, says he took care of the details in campaigning for ANILCA while Udall handled the big picture. The two criss-crossed the country, holding public hearings with more than a thousand witnesses.

Udall "made the campaign a popular, populist crusade," says Chuck Clusen, who chaired the Alaska Coalition, an alliance of conservation groups working on the bill. To inspire his colleagues, Udall recited from Woody Guthrie's "This Land Is Your Land" just before the key House vote in 1978. That song, he told the representatives, is a "great old song that I think moves Americans, because we have abused the land a time or two."

"We had support for Alaska Lands because Mo Udall was well liked," Clusen says. "He's not someone who gets someone in the corner and puts the squeeze on. He argues his case on the merits and lets it sit."

When the House passed the legislation by a vote of 277 to 31 in 1978, Udall paused just long enough to salute Rep. Don Young (R-Alaska) as a worthy adversary. "I would praise the gentleman from Alaska a little bit more," he said, "but I'm afraid I might get him defeated."

The Senate did not act on the bill that year, however, and by the time it came to the House floor again, in 1979, it was under furious assault from oil companies, big-game hunters, and other interests. Still Udall refused to compromise, defending his version of the bill and defeating his foes 268 to 157. But again the Senate failed to act, and in November 1980, when Ronald Reagan was elected president and the Republicans won a majority of seats in the Senate, Udall was forced to accept a weaker Senate version. Even so, the bill protected more acreage than any other conservation bill in history.

For all its unarguable significance, though, ANILCA is but one of hundreds of bills that the Interior Committee has shaped during Udall's 12 years as chair to establish or enhance national parks, historic monuments, trails, wild and scenic rivers, seashores, and wilderness areas. Last year alone it drafted more than 100 successful bills. "I don't believe there's a more active committee on the Hill," says Interior Secretary Lujan, himself a longtime member of that committee.

What is hardest to see in the soft-spoken and easygoing Udall is the stubborn drive that keeps him going: the drive that made the one-eyed young man become a pro ballplayer and a military pilot and that later propelled him through the long years of lawmaking—ultimately to the presidential campaign that he called "a marathon ordeal."

Today much of that determination is focused simply on moving himself around. A couple of years after his 1976 presidential campaign, Udall was diagnosed with Parkinson's disease, a degenerative neurological disorder. But while the congressman's head bobs when his medication isn't properly timed, he still makes the brisk walk to House roll-call votes under his own steam.

"Despite his health problems, Mo is legislatively as vigorous as ever," says the Sierra Club's Smith. "He's probably even more effective the longer he stays involved."

"I'd be a fool to tell you I'm as good as

I was," Udall says. "I can't dance or play basketball anymore, but my mind is as sharp; life's worth living. My medicine works, most of the time."

Udall prefers to talk about legislation rather than about his illness, however. "We've got to finish the wilderness system," he says, explaining that wilderness areas have been designated in the national forests of most states, but not in all of them. This year his committee will also start sorting out wilderness in lands under the jurisdiction of the Bureau of Land Management, a process that is likely to take several years.

Udall is gung ho about his pet project, the American Heritage Trust. That fund would create a billion-dollar-plus permanent endowment to be used by state and federal agencies to acquire park and refuge lands. (See "Finding Funding for Parks," page 30.) He also talks about a bill to limit logging in the ancient stands of giant timber in the Tongass National Forest of southeastern Alaska, and about the need to settle the question of drilling in the Arctic National Wildlife Refuge, which he wants permanently protected as wilderness.

"We can do more here in the next 20 months than 10 Congresses have done before," he says.

His advice to conservationists hasn't changed much since the early '70s: Get involved in politics, he says. Develop positive programs, avoid elitism, be reasonable and realistic, get organized, pick your shots, and focus on the issues.

He views the conservation movement with a long lens; when he talks about the decade of environmentalism, he often means the 1960s, the decade of protest and consciousness-raising, rather than the 1970s, when most of the nation's environmental laws were written. He looks ahead, noting that many of those bills have yet to be fully implemented.

"After the insurgency succeeds, you must govern," he warned environmentalists in the 1970s.

Today the former Young Turk is part of the establishment that governs, but he has helped keep the insurgency alive. Like reform, Udall says, "conservation is no sport for the short-winded." ■

JOSEPH A. DAVIS *is an environmental writer based in Washington, D.C.*

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HOT SPOTS

On Once-Wild Walden Pond

CONCORD, MASSACHUSETTS

MORE THAN 125 YEARS have passed since Henry David Thoreau last walked the sandy banks and wooded hills near Walden Pond. Today modern society endangers not only the woods surrounding the historic pond but its very waters.

"I've been going to Walden for 30 years," says Edmund Schofield, an ecologist and a member of Walden Forever Wild (WFW). "Now I see a mismanaged landscape and a sick ecosystem."

Walden Forever Wild contends that masses of visitors are wreaking havoc at the pond, stamping out vegetation and causing its shoreline to erode. A 1983 report in *The Hartford Courant* identified Walden, which hosts some 750,000 bathers a year, as having the highest urine content of any freshwater body in Massachusetts. In an effort to resolve these problems, WFW is working for legislation to prohibit swimming in the pond. The beaches are still open, but the state has limited parking in the area, a step WFW hopes will deter visitors.

In neighboring Walden Woods, the Thoreau Country Conservation Alliance (TCCA) is fighting the construction of an office park. A 148,000-square-foot complex consisting of two three-story buildings and a 518-car parking garage is slated to go up less than 700 yards from the shores of Walden Pond. Ironically, the developer of that project, Boston Properties owner Mortimer B. Zuckerman, is also pub-

ED COOPER

Walden Pond, once Thoreau's inspiration, today faces degradation.

lisher of *The Atlantic Monthly*, which in the 1860s helped win a national reputation for Thoreau by printing his work posthumously.

"The placement of this office park in Walden Woods represents the very imbalance that Thoreau warned against," says Thomas Blanding, a Thoreau scholar and president of the Concord-based TCCA, which works to conserve locales significant to Thoreau. "Its presence isolates us from the 'tonic of wildness' that Thoreau said was needed to invigorate society as well as individual lives."

Blanding's group began its campaign against the construction last June. With the support of the Massachusetts Audubon Society, the New England Chapter of the Sierra Club, and the Thoreau Society, it pressured developers to consent to an initial environmental impact study. In December the state ordered a second, more extensive review. Boston Properties appealed that order in court, but was overruled in late March. The company has also indicated that it would be willing to sell the property—for a staggering $10 million, more than three times its 1984 purchase price. Meanwhile, the TCCA is continuing to work with government officials toward developing a conservation plan for all of Walden Woods.

Trouble looms on Walden's opposite shore as well. Within 1,400 yards of the pond, also in Walden Woods, is the proposed site of a 135-unit condominium development. Local zoning codes prohibiting such developments in the area have been waived for the project because developers have said they would provide a certain percentage of lower-income housing. The percentage they are proposing just meets minimum requirements for exemption.

The TCCA and a local group, the Fairhaven Preservation Association, are contesting Concord's decision to allow the condominiums. They are also trying to focus the required environmental impact study on existing traffic and sewage problems that the complex would exacerbate, and they're asking that developers get state approval to build in a wetlands area.

"Many local people and officials seem to have lost touch with the town itself,

with the historical identity tied to the land and the literature," Blanding says. "If you can't save the place where the conservation ethic was first asserted, how can you hope to assert the principle elsewhere?" —*John H. Houvouras*

Duking It Out in the Carolinas

JOCASSEE WATERSHED

When the Jocassee Watershed Coalition was first organized two years ago, it had a specific purpose: to prevent construction of a pumped-storage plant in the Coley Creek basin above Lake Jocassee. Since then the group has widened its goals to include preserving an entire watershed on the North Carolina/South Carolina border and promoting energy efficiency among area residents. "When we looked into the need for the proposed project," says JWC Co-chair Bill Thomas, "we realized that energy efficiency was an even bigger issue than Coley Creek itself."

Thomas, vice-chair of the Sierra Club's North Carolina Chapter, and South Carolina Chapter Vice-chair Jerry Beck founded the JWC after learning of the proposed hydroelectric plant in early 1987. Duke Power Company had announced a plan to build a 2,100-megawatt pumped-storage facility on Coley Creek in the heart of the watershed. The $3.3-billion project would include a reservoir of approximately 400 acres and an underground tunnel connecting it to a powerhouse. It would also require a nine-mile access road and a high-voltage transmission line that would traverse the region.

Water tumbles toward one of four rivers in the Jocassee Watershed, where a controversial power plant may be built.

The proposed facility would use water from the reservoir to produce electricity during high-demand times, according to Thomas. But it would use

fossil fuel to pump the water back upstream at night and during other times when customers use little energy. Overall, critics say, the Coley Creek project would use 30 percent more energy than it would generate.

To fight the project, the JWC is trying to convince Duke that it doesn't need additional energy to satisfy its customers' needs. With the help of a $15,000 grant, the coalition hired the Energy Systems Research Group of Boston to analyze conservation and management programs that could help reduce energy demands on Duke. A report from that group indicates that more efficient use of energy (replacing all lightbulbs and appliances with more energy-efficient models, for instance) could save as much power as the Coley Creek project would produce, at one third the cost.

Duke is not convinced. "We think programs like that have a place in the utility business," says Duke design engineer Jim Hendricks, "but there will still be a need for additional generation. We need to maintain various options so that, as our load changes, we can meet the demand."

Still, the power company announced in March that it would postpone licensing procedures for the Coley Creek project until it has researched alternative methods of generating energy. Duke has not, however, eliminated the possibility of building the plant.

"We're pleased with the postponement, and we congratulate Duke," Thomas says, but he adds that his group is concerned because Duke continues to hold most of the land in the watershed. Already the region's Horsepasture River has been designated a National Wild and Scenic River, and the coalition wants the entire watershed protected. The National Park Service has proposed holding a meeting to discuss that possibility, but Duke has refused to attend.

In the meantime coalition members are continuing to stress the need for energy efficiency. Duke postponed the project because of its high cost, Thomas says. "They're looking into other alternatives for generation—coal-fired plants and combustion turbines—and that indicates to me that they're still not thinking in terms of energy conservation."

—Barbara Fuller

SIERRA NOTES

The late Francis P. Farquhar, a longtime Sierra Club leader, was honored in January when the U.S. Board on Geographic Names conferred his name on a 12,893-foot peak in Kings Canyon National Park.

Farquhar, who died in 1974 at age 87, was an eminent author, mountaineer, and conservationist. He served as a director of the Sierra Club for 27 years—including two terms as president—and edited the *Sierra Club Bulletin* from 1926 to 1945. He also served as president of the California Academy of Sciences in San Francisco and worked toward the establishment of Kings Canyon National Park in 1940.

Newly designated Mt. Farquhar is the northernmost peak of the Great Western Divide. It lies at north latitude 36°43'43", west longitude 118°29'53", or approximately 1.5 miles southwest of North Guard Lake and 1.6 miles northwest of Mt. Brewer.

The first poster in a new series highlighting Sierra Club conservation campaigns focuses on the battle to preserve the Arctic National Wildlife Refuge. Titled *Our Last Arctic Wilderness: Preserve or Plunder?*, the poster features five maps chronicling the encroachment of oil leasing and development in northern Alaska during the past thirty years. Copies of the poster are $5 each ($4.50 for members) plus $1 shipping per order from Sierra Club Public Affairs, 730 Polk St., San Francisco, CA 94109.

Also available on a rental basis from Sierra Club Public Affairs is a 30-minute videotape featuring national television coverage of the Club's work in 1988, including segments on offshore-oil drilling and the California ocean-sanctuary movement, oil exploration in Alaska, and John Muir's 150th birthday. Rental of the videotape, titled *Sierra Club Newsclip Composite*, costs $10 ($8 for members) for one week. For more information call Sierra Club Public Affairs at (415) 776-2211.

Sierra Club Books explores the ecology and geography of wilderness areas in Idaho, western Montana, Northern California, Oregon, Washington, southeastern Alaska, and coastal British Columbia in *A Sierra Club Naturalist's Guide to the Pacific Northwest* ($14.95, paper). Author Stephen Whitney has written several books on hiking and natural history.

Distinguished writer and naturalist Page Stegner blends social satire and environmental polemic in *Outposts of Eden* ($17.95), a collection of essays that convey the changing face of the American West. The late Edward Abbey called this "a good tough gritty book . . . a real book written by a real writer."

Koviashuvik ($17.95), the title of a new book by philosopher-scientist Sam Wright, means "a time and place of joyfulness in the present moment" in the Eskimo language. Wright and his wife gave the name to their home of 20 years in Alaska's Brooks Range. In this contribution to the Sierra Club Nature and Natural Philosophy Library, Wright examines what it means to "live like an inland Eskimo in the isolation of an arctic wilderness."

In a reissue of his best-selling guidebook *Photography for the Joy of It* ($16.95, paper), Freeman Patterson shares his insights into the art of lighting, composition, exposure, subject matter, symbolism, and more. And in an updated, expanded edition of *Trekking in Nepal, West Tibet, and Bhutan* ($14.95, paper), mountain guide Hugh Swift offers personal observations and practical guidance for making the most of any Himalayan adventure.

These 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. Allow four weeks for delivery.

The 25th anniversary of the 1964 Wilderness Act is the occasion for a major conference on the National Wilderness Preservation System, to be held September 11–14 on the Minneapolis campus of the University of Minnesota

and September 14–17 in the Superior National Forest in northeastern Minnesota. Sponsors include the University of Minnesota College of Natural Resources, the U.S. Forest Service, the Bureau of Land Management, the National Park Service, and the U.S. Fish and Wildlife Service. For information contact Charles R. (Dick) Joy, USDA Forest Service (RRWL), 310 W. Wisconsin Ave., Milwaukee, WI 53203; phone (414) 291-3610; or David W. Lime, University of Minnesota, College of Forestry, Department of Forest Resources, 110 Green Hall, St. Paul, MN 55108; phone (612) 624-2250.

The let-burn policy that was the focus of national controversy during the Yellowstone fires of 1988 will be discussed and debated at a conference May 19 in Yellowstone National Park. For more information contact the Greater Yellowstone Coalition, P.O. Box 1874, Bozeman, MT 59771; phone (406) 586-1593.

A forum on renewable energy and climate change, cosponsored by the U.S. Environmental Protection Agency and the U.S. Export Council for Renewable Energy, will be held June 14–15 in Washington, D.C. At the forum the EPA will present the results of its studies on global warming, and energy analysts will report on the potential uses of solar technology to reduce the atmospheric pollutants that contribute to the greenhouse effect. For more information contact the Forum on Renewable Energy and Climate Change, 2201 Wisconsin Ave., N.W., Suite 230, Washington, DC 20007; phone (202) 333-2749.

Four outdoor-gear companies have formed the Outdoor Industry Conservation Alliance to fund selected projects organized by conservation groups. Kelty Pack, Inc., The North Face, Patagonia, and Recreational Equipment, Inc., announced the action in February, acknowledging that the health of their industry is related to the well-being of wilderness and the environment. For more information write to the Outdoor Industry Conservation Alliance, c/o REI Public Affairs Dept., P.O. Box 88126, Seattle, WA 98138-0126.

Wilderness First Aid is a new quarterly magazine edited and published by climber, skier, and Red Cross volunteer Steve Donelan. It is aimed, he says, at "people who are serious about health and safety in outdoor activities." A one-year subscription is $12 from *Wilderness First Aid*, P.O. Box 1227, Berkeley, CA 94701.

The Climbing Art, a new mountaineering magazine, attempts "to give voice to the higher levels of the literature, art, humor, and philosophy of climbing," according to its founder, rock climber Pat Ament. A one-year subscription to the quarterly magazine is $10 from *The Climbing Art*, P.O. Box 816, Alamosa, CO 81101.

The American Hiking Association publishes a biannual directory of more than 1,500 volunteer jobs and internships nationwide for those seeking work related to the wilderness. Copies of "Helping Out in the Outdoors" are $3 each from AHS/Helping Out, Dept. #PR17, 1015 31st St., N.W., Washington, DC 20007. ■

Into the Heart's Wild Places

EDWARD ABBEY (1927–1989)

Peter Wild

"NO MORE CARS in national parks!" he thundered in *Desert Solitaire*. "Let the people walk. Or ride horses, bicycles, mules, wild pigs—anything—but keep the automobiles and the motorcycles and all their motorized relatives out." He chortled on, enjoying the argument: "We have agreed not to drive our automobiles into cathedrals, concert halls, art museums, legislative assemblies, private bedrooms, and the other sanctums of our culture; we should treat our national parks with the same deference, for they, too, are holy places."

That was Edward Abbey at his flashing best: absurd, sarcastic, and funny all at once, but often speaking the truth that lay in our own hearts, unrecognized until he brought it to the surface from his. Every age has its truth-tellers, and as environmentalists in the closing decades of the 20th century we needed Edward Abbey. Needed him to show us how preposterously the nation had become tangled in the century's glitter.

Ranging up and down the emotional scale, Abbey gave us permission to speak of a snaggy tree as simply gone mad, to guffaw at bureaucracy when necessary, and, yes, guffaw at ourselves on occasion. For that great gift, we can thank him.

For all that, and for whatever else one might have to say about him, he was a traditionalist. What could be more traditional than an American reveling in the great, open greenness of the earth? Or more fundamental than taking a stand—he had the mettle of Ethan Allen—when the wildness that lent meaning to his life was threatened?

We remember Edward Abbey now for his immediacy, for giving voice to concerns that were stirring in our own breasts. But, no doubt, with cooler heads the contemporary literary historians will think of him as more enduring, as combining the rapier of Thoreau with the large-souled righteousness of John Muir. Either way, he was smack in the middle of traditional American nature writing, carrying forward its heat and light, and the smoke of its magical trickery, into our own decades.

Still, there was something basic—meat-and-potatoes, if you will—about Ed Abbey. In truth he was what he always said he was: a shy, backwoods man of few words. Off and on Ed taught a writing course at the University of Arizona, and as it happened we shared an office for a couple of semesters. I am happy to say I have little to report on that for future biographers. "Peter," he'd grin, coming in on any particular afternoon. "Ed, how you doing?" I'd mumble as he passed to his desk. A few words, then it was back to work. He'd sit on his side of the steel-gray bookcase that divided our room, I on mine, both of us correcting papers. Sometimes the English instructor's sigh would arise from his side of the bookcase, as indeed issued occasionally from mine, while we both labored. Other than that, no fuss, no muss. We were both former farmboys, both used to life's sure measure of tediums. He was a teacher and a writer, and he knew his job. I admired the lack of theatrics about him.

On occasion he'd drop by my home near campus for a chat. He'd idle with the dogs, josh my student wife for studying too hard. Then he'd drive off in his battered pickup truck. Or he'd invite us to his house out in the foothills of the Tucson mountains. There'd be a pot of stew, several other writers, music. Ed likely would be barefoot, tapping a toe to his favorite album as we sat on the patio out back talking, watching the late-afternoon sun turning the spines of the cactus forest into a momentary sweep of silver just before it sank behind Wasson Peak.

As to the talk, it rarely got serious. Ed had an instinct, perhaps the writer's superstition, about not mentioning what was a-grinding in the literary mill, a knack for avoiding those Big Questions that every author must struggle with. In accepting the Nobel Prize, Ernest Hemingway said that "a writer should write what he has to say and not speak it." Fortunately for us, Ed had the wisdom to know what was best saved for his typewriter.

Yet Hemingway also warned that "it is because we have had such great writers in the past that a writer is driven far out past where he can go, out to where no one can help him." So in Ed's books we hear him struggling out there, sometimes grimly, sometimes in joy, as we all struggle. Edward Abbey, very much in the tradition of Thoreau and Muir, struck out to explore new territory, making way for others after him to strike out still further into their own wild places of the heart.

PETER WILD, *a professor of English at the University of Arizona, writes frequently for* Sierra.

Pieces of a Quilt

The Sierra Nevada: A Mountain Journey
by Tim Palmer
Island Press
$31.95, cloth; $19.95, paper

Mark Mardon

TIM PALMER, A GYPSY WRITER if there ever was one, travels from river to river, mountain range to mountain range, living and working out of his van. His latest work in defense of wilderness evidences a deep, abiding love for the Sierra Nevada. And as passionate lovers are wont to do, he endlessly and intimately scrutinizes the moods and contours of the one he adores, and rages at the thought of his beloved in any way defiled.

In the early spring of 1984, Palmer journeyed from Lake Almanor at the northern extreme of the Sierra Nevada to Tehachapi Pass at the range's southern boundary. "Now, more than 200 years after the first writer took note of the area, I will see what is here and what has happened to the place," he states at the outset of *The Sierra Nevada: A Mountain Journey*, his fifth book. "I am here to learn about these mountains and about our care and management of them."

Thus motivated, Palmer relates how, in his van and afoot, he systematically explored a region caught between the desires of developers and defenders. In meticulous detail he records what seems to be every geographical fact he was able to glean about the places where he stopped as he traveled the Sierra's roads and trails. He also recounts conversations with rangers, river runners, rock climbers, realtors, merchants, foresters, government planners, politicians, wilderness defenders, teachers, hikers, and recluses. In the process, he pieces together a history of recent conservation struggles in the range.

The result is a narrative of considerable breadth. Palmer demonstrates that what we sometimes view as isolated conservation battles are in fact patches in a broader quilt. Though individuals

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may be separated from one another by a river, a peak, or a valley, they are nonetheless working toward the same goal: preservation of the Sierra Nevada.

In the town of Quincy, at the northern end of the range, Palmer meets Wayne Dakan, who laments the destruction of the Sierra's forests. "Greece used to be 60 percent trees," Dakan tells Palmer. "Now it's 15 percent trees; the rest is like desert. We're headed down that road."

In Yosemite Valley, Palmer confronts another sad reality. With a thousand buildings, 30 miles of road, and a daily crush of cars, the temple so cherished by John Muir is now, as park landscape architect and planner Don Fox puts it, "not unlike a small city of 12,000 people." And that population swells to 22,000 on busy days. Reflecting on the planning that went into opening Yosemite to the world, Palmer notes that the valley "became the victim of a madness that tried to accommodate whatever anybody and everybody wanted to do."

Southeast of Yosemite National Park at Mammoth Lakes, an area of condominiums and ski resorts dominated by 11,053-foot Mammoth Mountain, Palmer meets 1952 Olympic skiing champion Andrea Mead Lawrence. A resident since 1968 and still an active skier, Lawrence campaigned on her own against high-rises, then, as a Mono County supervisor, opposed new roads in the area and testified before Congress in support of the California wilderness bill. "If any place needs planning," Lawrence says, "it's here."

Just outside the southern Sierra town of Tehachapi, Palmer visits Joe Fontaine, a leader in California wilderness battles since he joined the Sierra Club in 1956. As president of the Club in 1980, Fontaine focused on national issues. Now that he's again among the club's rank and file, Fontaine works on local issues—"and it's good," he says. "You always like to come home."

At every turn Palmer uses numbers to complement these personal testimonies. Hardly a page goes by where he doesn't quantify, calculate, enumerate, or otherwise precisely delineate something. At times the statistics are useful. Palmer notes, for example, that because of Los

Vanishing Arctic:
Alaska's National Wildlife Refuge
Introduction by Edward Hoagland
Narrative by T.H. Watkins
Photographs by Wilbur Mills and Art Wolfe
Aperture/The Wilderness Society
1988; $29.95, cloth

If Congress rolls out the red carpet for formal oil exploration in the Arctic National Wildlife Refuge (where this photo was taken), expect the oil companies to *really* roll out the barrels. The EPA recently charged that the spills, leaks, and sloppy waste-management practices accompanying North Slope development have severely damaged the tundra environment. The congressional Office of Technology Assessment predicts ANWR would suffer similarly from development there.

Angeles' unquenchable thirst, wildlife-rich Mono Lake has "dropped an average of a foot a year from 1941 to 1982, lost 45 percent of its volume, and shrunk from 55,000 to 40,000 acres." Other times the detail is cumbersome: "In the national forests of the Sierra, more than 4,406,382 acres are in grazing allotments, 1,100,152 of them classified 'suitable.' In 1984, 32,019 cattle and 21,808 sheep grazed here for a total of 162,056 animal unit months."

While Palmer's aesthetic appreciation for the mountains is undoubtedly keen, he is less adept at descriptive passages than he is at weaving together statistics and oral histories. Too often, when attempting to convey his elation about the landscape, he strives unsuccessfully for elegant language. Some sentences don't quite sing: "The touch of grass resets my senses so that I once again see a landscape that is almost unbelievable. The smell of the sweet evening air imparadises me." His prose simply lacks the polish found in the work of more sophisticated nature essayists.

Still, Palmer's abundant enthusiasm and diligent reporting compensate for his stylistic limitations. The sheer volume of his note-taking is impressive enough to engage the reader (the book concludes with a statistical and historical almanac of the Sierra Nevada). It reminds us that taking time to collect data about a place—to learn the details that come from reading guidebooks, poring over maps, talking to locals, and listening to rangers—can simultaneously be an enjoyable pastime and increase our conservation consciousness.

In this book, as in his fourth work, *Endangered Rivers and the Conservation Movement* (University of California Press, 1986), Palmer has allowed his love affair with America's wilderness landscape to inspire him to great achievement. And that, of course, is what all romances should do. ■

MARK MARDON *is* SIERRA*'s assistant editor.*

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Sierra Club Outings

JOEY FLAHMAN

Sherpani in Lamjung Himal area, Nepal.

Circle the Annapurna Massif on a springtime trek in Nepal, ride a train through a Portuguese valley terraced with vineyards, or explore Wordsworth country in Britain's Peak and Lake districts. These opportunities and more await you on Sierra Club Foreign Outings in 1990. For more information on these trips, send in the coupon on page 110. Please refer to our 1989 Outings Catalog (*Sierra*, January/February) for our reservation and cancellation policy and an application form. Prices are subject to change and do not include airfare. Leader approval is required for all foreign trips. See the accompanying 1989 Open-Trip List for other Foreign Outings.

1990 Foreign Outings

[90527] Cross-Country Skiing in the Austrian Tyrol, Austria—February 10–18, 1990. *Leader, Jeanne Blauner, 117 Colonial Ave., Haddonfield, NJ 08033. Price: $1,610; Dep: $100.* In the beautiful Sun-Plateau just west of Innsbruck, we will tour four villages connected by cross-country ski trails. Lessons and tours of the countryside are scheduled for the first three days, in preparation for four days of skiing from inn to inn with our Austrian guide. We will stay in comfortable hotels and pensions and enjoy traditional and ample Austrian meals. Our luggage will be transported for us. A special treat will be an evening sleigh ride.

[90545] China Kaleidoscope II—April 2–22, 1990. *Leader, Phil Gowing, 2730 Mabury Sq., San Jose, CA 95133. Price: $3,380; Dep: $100.* This is a repeat of last year's successful trip to exotic China. We will enjoy a long walk on the Great Wall, Tian'anmen Square and the Forbidden City, the Great Hall of the People, and Mao Zedong Memorial Hall. Then we'll visit the Terra Cotta Army of the Qin Dynasty in Xian and enjoy a look at the beloved pandas in Chengdu. Dafu, the Great Sitting Buddha (233 feet high); an optional climb of Emei Shan, one of the four sacred Buddhist mountains; a river trip through the famous Yangtze gorges; and a walk through the prehistoric Dawn Redwoods are all on our itinerary. We will finish our trip in bustling Shanghai, where we will enjoy a performance of the world-famous Shanghai Acrobatic Circus. Accommodations will be in the best available hotels.

[90550] Annapurna Circle Trek, Nepal—May 5–June 1, 1990. *Leader, Peter Owens, c/o John Bird, P.O. Box 126, Point Richmond, CA 94807. Price: $1,795; Dep: $100.* This 25-day trek will circle the Annapurna Massif by a route that takes us up the Marsyangdi Khola River to the Manang Valley and across 17,650-foot Thorong La pass. We then descend to Muktinath, a sacred shrine for both Hindus and Buddhists, and proceed down the awesome Kali Gandaki gorge between Annapurna (26,504 feet) and Dhaulagiri (26,810 feet). Time has been scheduled for a side trip to Thulobugin Pass with fantastic views of the north face of Annapurna I.

[90555] Picturesque Portugal—May 6–19, 1990. *Leader, John Doering, 118 Las Ondas Ct., Santa Cruz, CA 95060. Price: $2,205; Dep: $100.* Departing from Lisbon, we will travel in vans to explore the northern two thirds of Portugal. We'll climb the forested hills of the country's most important national parks and tramp the oceanside dunes of natural preserves. A ride on a narrow-gauge train will take us through a valley exquisitely terraced with vineyards to Vila Real, where we'll shop in an open-air market. We'll walk through Bussaco's 2,500-acre arboretum, watch ceramic goods and tapestries being made, circle the ramparts of walled villages and explore their castles, sip a *bica* while sampling Portugal's delicious pastries, and experience its wines, cuisine, and comfortable hotels.

[90565] Walking in the Peak and Lake Districts, England—June 2–16, 1990. *Leader, Robin Brooks, 920 Kennedy Dr., Capitola, CA 95010. Price: $2,440; Dep: $100.* Walking in Britain's national parks is a delight. Each

day we will hike with daypacks along famed scenic trails and return in the evening to good hotels, where we'll dine and sleep in comfort. The Peak and Lake districts are two of England's finest national parks. In the Peak District verdant valleys contrast with the rugged Pennines, and quaint villages set off grand estates. In the Lake District we'll explore Wordsworth country—peaks and ridges around the lakes of central Cumbria made famous by poets and painters for more than two centuries.

[90570] Tibet—The Forbidden Wilderness: From Kathmandu to Lhasa—June 11–July 2, 1990. *Leader, Patrick Colgan, P.O. Box 325, La Honda, CA 94020. Price: $3,560; Dep: $100.* Inaccessible to the West for centuries, Tibet is an incredible ice- and snow-bound Himalayan fastness, truly warranting the title "Forbidden Wilderness." We will travel by plane, chartered bus, and on foot to explore and enjoy this unique and isolated mountain region. First we fly from Kathmandu in Nepal to Tibet's 11,800-foot capital city of Lhasa, an ancient Buddhist citadel founded 1,400 years ago. From here we negotiate our way along often rough or steep mountain tracks to visit remote monasteries and isolated mountain villages. The views of Everest, Lhotse, and Makalu from Tingri, where we start our nine-day trek, have been described as the most spectacular of the entire Himal. Our trek ends in the fabled Rongbuk Valley, Sanctuary of the Birds. The terrain can be harsh and inhospitable, and campsites primitive. Hotel amenities and creature comforts in Tibet and Nepal are frequently sparse, if not altogether lacking. That said, the trip will regardless be one of the most dynamic and intellectually stimulating experiences of your life!

Special Notes

- Because of a slight change in itinerary, the price for trip #89937 (Midsummer in Northeast China—July 22–August 11, 1989), first listed in our 1989 Outings Catalog, has been lowered $360 to $3,485. The trip now starts and ends in Beijing instead of Hong Kong. The rest of the itinerary is the same.
- The Foreign Outings program is considering organizing a trip to the Soviet Union in mid-1990. The trip would be to the eastern section of the country, until recently off-limits to Westerners. Hikes in the Primorski region wilderness are planned, as well as tours of the cities of Nakhoda, Vladivostok, and Khabarovsk. If you would like to receive further information about this trip when it is available, please note "USSR" on the supplement-request form on page 110.
- The Service Trips program may schedule additional trips this summer to repair fire damage in Yellowstone National Park. All will be similar to trip #89264 (Thorofare Trail Damage Repair). For more information on these new service trips, note "Yellowstone" on the supplement-request form on page 110.

New 1989 Domestic Trips

[90342] Oak Creek Canyon and Sedona: Red Rock Country in Arizona—October 15–22, 1989. *Leader, Ben Cohn, 65 Verde Valley School Rd., Oak Creek Est., Unit E-1, Sedona, AZ 86336. Price: $580; Dep: $100.* Take leisurely dayhikes amidst the soaring evergreens and towering red sandstone buttes and mesas of Arizona's fabulous Oak Creek Canyon near Sedona. Shared first-class resort accommodations are provided each evening in townhouse units with complete facilities. In addition to our schedule of interesting, easy-to-moderate dayhikes with more than 32 wilderness trails to choose from, a day will be at leisure so participants can enjoy the charm and sights of Sedona. Another day will be devoted to visiting Sunset Crater and Wupatki National Monuments to the north. Participants are expected to use their own vehicles for driving to trailheads and for the national monument excursion. Two evening meals are included in the trip price; all other meals are the responsibility of participants.

[90336] Death Valley Base Camp, Death Valley National Monument, California—December 21–28, 1989. *Leader, Alan Stahler, P.O. Box 1006, Nevada City, CA 95959. Price: $465; Dep: $50.* Death Valley—the lowest point in North America—is a geologist's dream. The rocks of the mountains and canyons lie exposed to the eye, rather than buried by vegetation and soil. A geologist will accompany us to explain their history. The emphasis of our trip will be the natural history of the valley—its geology, its weather, and its scarce but very interesting plants and wildlife. After the sun goes down, clear skies will provide a chance for everyone to learn the stars, the constellations, and our place in the galaxy. While Death Valley is the hottest spot on the continent during the summer, winter temperatures can range from mild to below freezing, so bring appropriate clothing. We will use our cars to reach trailheads and various points of interest, including Scotty's Castle and a ghost town.

ROGER L. HARRISON

Death Valley, California.

Sierra Club Outings

Space is still available on a number of 1989 Sierra Club Outings. If you act promptly, you can probably find a spot on one of the trips listed below. Refer to the 1989 Outings Catalog (*Sierra*, January/February) for a complete list of 1989 trips and trip descriptions. For trips not listed below, check with the Outing Department—vacancies may occur. Please see the catalog for our reservation and cancellation policy and a trip application form. Read the policy carefully before applying. To order supplemental information on any of the 1989 Outings, send in the coupon on page 110.

1989 Open-Trip List

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

Trip Number	* = Leader approval required	Date	Rating	Trip Fee (including Deposit)	Per Person Deposit	Leader
ALASKA TRIPS	*(Prices do not include airfare to Alaska or charter air costs on most trips.)*					
89073	*Admiralty Island Canoe Trip	June 19-28		995	100	Harry Reeves
89076	*Alaska Range, Mt. Hayes to Mt. Deborah	July 2-15		1295	100	Cal French
89082	*Denali Bicycle Tour	July 25-Aug. 2		965	100	Jim Carson
89083	*Tundra Dreams—A Leisure Trip in the Thelon Oasis, Northwest Territories, Canada	July 28-Aug. 11		2095	100	Sigrid Miles
89087	*Alaska Range Bicycle Exploration	Aug. 13-26		1295	100	Stephen Kasper
BACKPACK TRIPS	*(See Alaska and Foreign Trips for other backpack outings.)*					
89099	*Glacier Peak Wilderness/North Cascades Park, WA	July 7-16	M-S	475	50	Rodger Faulkner
89100	*Cranberry Rendezvous, Monongahela Forest, WV	July 8-15	L	345	50	Chuck Cotter
89101	*Pacific Crest Trail, Lakes Basin to Belden, Sierra	July 8-17	M	335	50	Tina Welton
89107	*West Elk Wilderness, Gunnison Forest, CO	July 17-26	M	385	50	Bob Berges
89109	*Red Mountain Basin Lakes, John Muir Wilderness, Sierra	July 21-29	M	295	50	Barry Bolden
89111	*Ionian Adventure, Kings Canyon Park, Sierra	July 22-30	M-S	305	50	Jim Halverson
89113	*Kings-Kern Divide, Sequoia/Kings Canyon Parks, Sierra	July 23-30	M-S	330	50	Jack Wickel
89115	*Rock Creek Ramble, Sequoia Park, Sierra	July 23-30	M	285	50	Don Endicott
89119	*Rosy Finch Lake, John Muir Wilderness, Sierra	July 28-Aug. 5	M	335	50	Cal French
89124	*Le Conte Divide, John Muir Wilderness, Sierra	July 29-Aug. 6	M	300	50	Bob Anderson
89125	*Wheeler Peak, Great Basin Park, NV	July 30-Aug. 5	L-M	380	50	Ted Doll
89126	*Up and Over the Great Western Divide, Kings Canyon Park, Sierra	July 30-Aug. 6	M	270	50	Lasta Tomasevich
89130	*Natural History Along the Great Western Divide, Sequoia Park, Sierra	Aug. 5-13	M-S	295	50	Gerry Dunie
89131	*High Country Hiking in the Sawatch Range, San Isabel Forest, CO	Aug. 6-12	M-S	260	50	Jim Urban
89134	*Big Arroyo, Sequoia Park, Sierra	Aug. 7-18	L-M	390	50	Mac Downing
89138	*The Mono Recesses, John Muir Wilderness, Sierra Forest, Sierra	Aug. 17-26	M-S	355	50	Frances & David Reneau
89140	*Bear Lakes High Route, Sierra Forest, Sierra	Aug. 19-27	M	330	50	Marilyn & Dan Smith
89141	*Nine to Five Lakes, Sequoia Park, Sierra	Aug. 19-27	M-S	375	50	Joe Uzarski
89144	*Red and White Lake, John Muir Wilderness, Sierra	Aug. 20-27	M	300	50	Jim Gilbreath
89147	*Thunder Mountain, Kings Canyon/Sequoia Parks, Sierra	Aug. 24-Sept. 3	M-S	335	50	Gordon Peterson
89148	*Big Five Lakes, Sequoia Park, Sierra	Aug. 26-Sept. 3	L-M	325	50	Hal Fisher
89149	*Kaweah Basin, Sequoia Park, Sierra	Aug. 26-Sept. 3	M-S	325	50	Don Lackowski
89150	*West Elk Wilderness Wanderabout, Gunnison Forest, CO	Aug. 27-Sept. 2	L-M	385	50	John Lutz
89152	*Peakbagging in Evolution Country and the Palisades, Kings Canyon Park, Sierra	Aug. 27-Sept. 4	M-S	330	50	John Kerr
89153	*White Divide Peakbagging, Sierra Forest/Kings Canyon Park, Sierra	Aug. 27-Sept. 4	M-S	285	50	Vicky Hoover
89154	*The Indian Lakes, John Muir Wilderness, Sierra	Sept. 6-14	L	315	50	Bill Engs
89156	*Tahoe—Desolation Wilderness Loop, Sierra	Sept. 8-16	L-M	305	50	Modesto Piazza
89158	*Continental Divide Trail, La Magna to Elwood Pass, CO	Sept. 10-17	M-S	305	50	John Lemon Sellers
89160	*Summer's End in the Adirondacks, NY	Sept. 18-24	M-S	340	50	Kenneth S. Limmer
90325B	*Dark Canyon, UT	Sept. 30-Oct. 7	M	365	50	Steve Moore

SIERRA CLUB OUTINGS

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

Trip Number	* = Leader approval required	Date	Rating	Trip Fee (including Deposit)	Per Person Deposit	Leader
90326	*Kanab and Tapeats Creeks, Grand Canyon, AZ	Sept. 30-Oct. 8	S	370	50	Bob Madsen
90327	*Navajo Mountain–Rainbow Bridge, AZ	Oct. 1-7	M	365	50	Barry Morenz
90328B	*Maze District, Canyonlands Park, UT	Oct. 6-14	S	455	50	Janet Ross
90329	*Escalante Wildlands, Box-Death Hollow Wilderness, UT	Oct. 7-14	M	340	50	Bob Hartman
90330	*Foothills Trail, SC and NC	Oct. 14-21	M	265	50	Helene Baumann
90331	*Ozark Highlands Trail, Ozark Forest, AR	Oct. 15-21	M	380	50	Larry Ten Pas

BASE CAMP TRIPS *(See Foreign, Hawaii, and Canoe Trips for other base camp outings.)*

89051	Mono Basin Natural History, Inyo Forest, CA	June 3-10		385	50	Len Lewis

BICYCLE TRIPS *(See Foreign and Alaska Trips for other bicycle outings.)*

89178	*Canyon Country Mountain Bike Loop, AZ and UT	May 21-June 2		1040	100	Deborah Northcutt
89181	*East-West Wisconsin Bicycle Tour	June 24-July 1		355	50	Alice Honeywell
89183	*Lake Placid Circuit, Adirondack Park, NY	Aug. 6-12		495	50	John Borel
89185	*Grand Tetons–Yellowstone Bicycle Tour, WY and ID	Aug. 6-13		440	50	Paul Von Normann
89187	*Discover New Hampshire Bicycle Tour	Aug. 13-19		355	50	Frank J. Traficante
89188	*Finger Lakes Lark, NY	Sept. 17-23		365	50	Irwin Rosman
89189	*Bicycling the North Woods, WI	Sept. 17-24		350	50	Larry Ten Pas & Max Cannon
90337	*Cycling in Puerto Rico	Dec. 24, 1989-Jan. 1, 1990		485	50	Tali & Bob Mathis

BURRO TRIPS

89194	Up Bear Creek, John Muir Wilderness, Sierra	Aug. 6-13		495	50	Peter Ohara
89195	Over Hell-for-Sure Pass, John Muir Wilderness/Kings Canyon Park, Sierra	Aug. 13-21		495	50	Mark Roderick
89196	Over the Goddard Divide Family Trip, Kings Canyon Park, Sierra	Aug. 21-Sept. 2	Price Per Adult 765	Price Per Child 635	100	Dan Holmes

FOREIGN TRIPS *(Prices do not include airfare.)*

Africa

89890	*Madagascar—Mysterious Island at the End of the Earth	June13-July 3		2590	100	Patrick Colgan
90530	*Zanzibar to Ngorongoro Crater, Tanzania	Feb. 14-March 1, 1990		3460	100	Kern Hildebrand

Asia

89937	*Midsummer in Northeast China	July 22-Aug. 11		3485	100	Sharon Cupp
90505	*Trekking in the Dragon Kingdom, Central and Eastern Bhutan	Sept. 23-Oct. 21		4415	100	Jane & John Edginton
90515	*Makalu Trek, Nepal	Oct. 2-28		2850	100	Emily & Gus Benner
90521	*Kangchenjunga Himal, Nepal	Oct. 30-Dec. 2		2295	100	Wayne Woodruff
90522	*Annapurna Sanctuary, Nepal	Nov. 2-20		1455	100	Frances Colgan
90524	*Lamjung Christmas Trek, Nepal	Dec. 18, 1989-Jan. 6, 1990		1560	100	Cheryl Parkins & David Horsley
90535	*Gorkha-Chitwan Trek, Nepal	Feb. 26-Mar. 17, 1990		1450	100	Peter Owens
90540	*Rolwaling Trek, Nepal	Mar. 24-Apr. 13, 1990		1470	100	Peter Owens

Europe

89945	*Central Italy by Bike	Sept. 17-30		2345	100	Thelma Rubin
90510	*Autumn Colors in Idyllic East Bavaria, West Germany	Sept. 24-Oct. 7		2200	100	Sigrid Miles

Latin America

89878	*Brazilian Jungle and Wildlife Adventure, Brazil	June 14-26		2195	100	Dolph Amster
89902	*Tropical Potpourri: Turtle Beaches, Jungle Rivers, and Volcanoes, Costa Rica	July 1-10		1965	100	Ruth Dyche

Pacific Basin

89910	*Indonesia—Land Below the Wind	July 1-21		2875	100	Ray Simpson

Sierra Club Outings

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

Trip Number	* = Leader approval required	Date	Rating	Trip Fee (including Deposit)	Per Person Deposit	Leader
HAWAII TRIPS						
89214	Introduction to Oahu	Sept. 19-27		1225	100	Ned Dodds
90341	Fall Big Island Leisure Trip	Sept. 29-Oct. 8		875	100	Eunice Dodds
HIGHLIGHT TRIPS						
89221	Grand Tetons Leisure Trek, Targhee Forest, WY	July 23-30		890	100	Len Lewis
89224	The Glacial Basin Route, Inyo Forest, Sierra	Sept. 3-15		920	100	Bud Bollock
89225	To the Crest of the Sierra Nevada, Sierra	Sept. 10-17		740	100	Len Lewis
89226	Three Sisters Llama Trek, Three Sisters Wilderness, OR	Sept. 18-22		895	100	Maggie Seeger
90344	Thanksgiving in the Desert, Van and Hiking Tour, AZ and Mexico	Nov. 17-24		575	100	John Ricker
SERVICE TRIPS						
89238	*Sierra Club's Own Trail Maintenance, Sierra Forest, Sierra	June 21-July 1		175	50	Mary Grisco
89244	*Airplane Wreck Removal, Sierra Forest, Sierra	July 10-20		175	50	Bill Weinberg
89245	*Piute Pass, Inyo Forest, Sierra	July 10-20		175	50	Mary Hess
89246	*Deer Creek Trail Maintenance, Trinity Alps, CA	July 12-22		175	50	David Stern
89247	*Meteor Lake Trail Maintenance, Klamath Forest, CA	July 12-22		175	50	To Be Announced
89248	*Chelan-Sawtooth Wilderness Revegetation Project, North Cascades Forest, WA	July 15-25		175	50	Tim Cronister
89249	*Seventh Annual Beginning Campers' Trail Reconstruction and Wilderness Restoration, Washakie Wilderness, WY	July 17-27		175	50	Ed Thomas
89252	*El Rito Azul Trail Construction, Rio Grande Forest, CO	July 21-31		175	50	Dennis Grzezinski
89254	*Third Annual Clair Tappaan Lodge Family Trip, Tahoe Forest, Sierra	July 22-30	Price Per Adult 200 / Price Per Child 140		50	Marylouise & Vince White-Petteruti
89259	*Solitude Lake Trail Reconstruction, Bighorn Forest, WY	July 31-Aug. 10		175	50	Kathryn Hannay
89262	*Rolling Creek Trail Maintenance, Pike Forest, CO	Aug. 2-12		175	50	Wally Mah
89263	*Wind River Trail Maintenance, Popo-Agie Wilderness, WY	Aug. 10-20		175	50	Jan Moraczewski
89276	*Golden Link Trail Maintenance, Gila Wilderness, NM	Aug. 11-19		150	50	Barbara Coon
89266	*Yosemite Park Revegetation and Trail Project, Sierra	Aug. 13-24		175	50	C.E. Vollum
89267	*Targhee Teton Trail Maintenance, WY	Aug. 15-25		175	50	John Albrecht
89269	*High Uintas Trail Construction, Wasatch Forest, UT	Aug. 19-29		175	50	Tod Rubin
89275	*Ice Age Trail, Medford District, Chequamegon Forest, WI	Sept. 9-19		175	50	Sherri Serna
WATER TRIPS *(Canoe)*						
89283	*Wild and Scenic Rogue River, OR	July 10-14		580	100	Iila & Chuck Wild
89289	*Raquette River Sampler, Adirondack Park, NY	Aug. 27-Sept. 2		300	50	Edith Schell & Irwin Rosman
89291	*Fall Adirondack Canoe Trip, NY	Sept. 25-30		285	50	Walter T. Blank

For More Details on Outings

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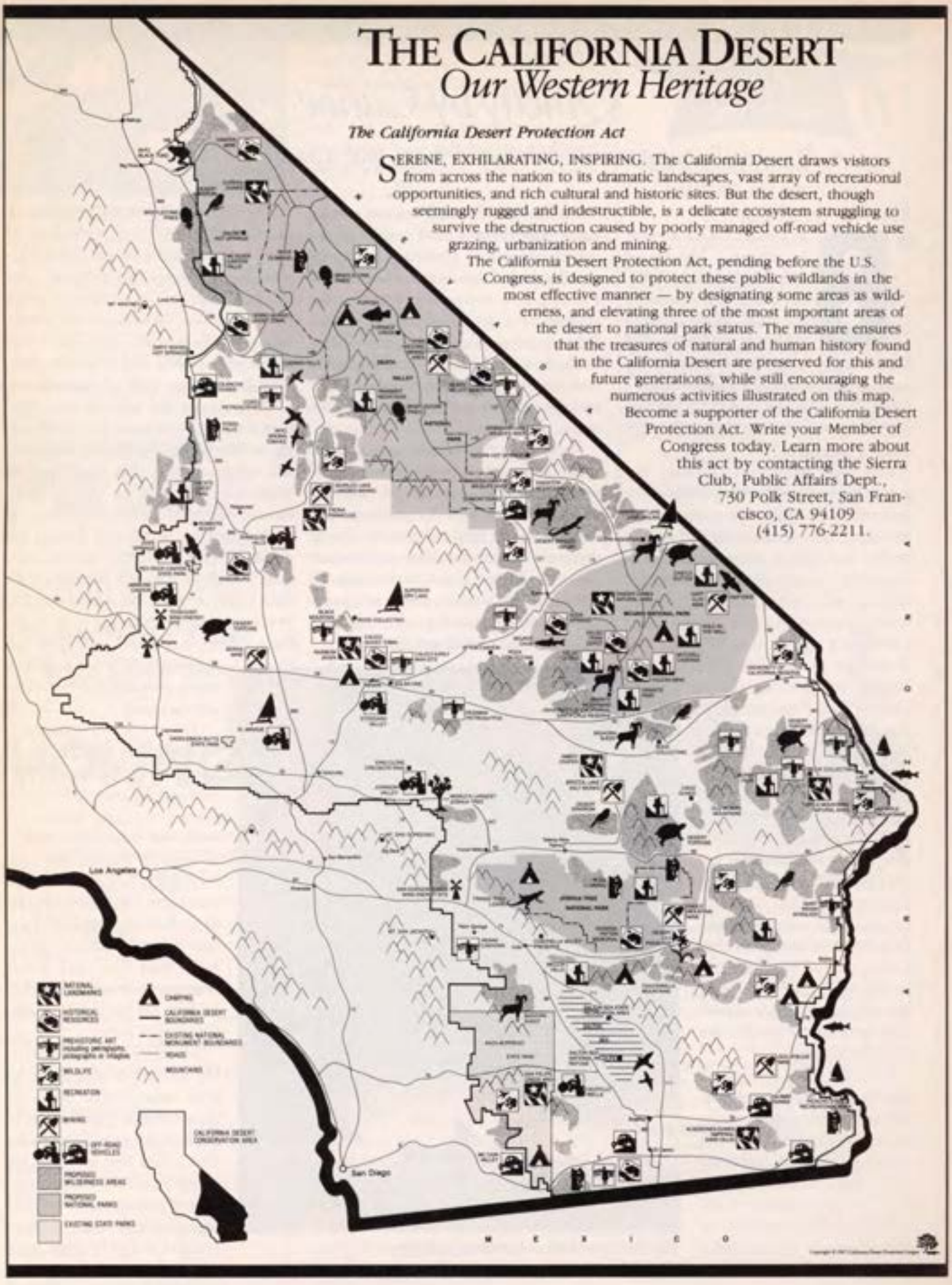
Become a supporter of the California Desert Protection Act. Write your Member of Congress today. Learn more about this act by contacting the Sierra Club, Public Affairs Dept., 730 Polk Street, San Francisco, CA 94109 (415) 776-2211.



Quietly by Canoe

If you really want to understand wilderness, grab a paddle and take a seat.

Ron Reid

"Backpack? Me? You must be joking." My friend twisted his paddle deftly, matching the course of his canoe to the curving shoreline. "Why should I sweat all day under some fancy pack, feeding every bug for miles, when I could be out on the water? I'll tell you one thing—no one ever wrote poetry about a backpack."

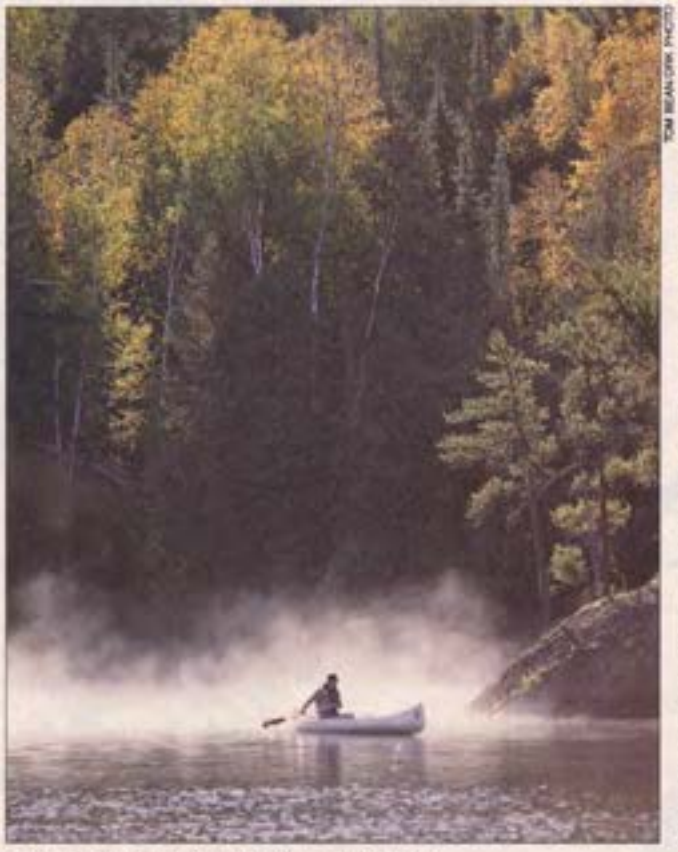
Like most wilderness canoeists, my pragmatic companion has a touch of the romantic about him. He yearns to follow the scent of adventure left by the traders and priests and explorers who canoed the breadth of the continent. He seeks the wake of the woodland Indians, who fashioned the first canoes some 2,000 years ago to travel the maze of waterways on the Canadian Shield. To him a canoe is no intruder in the wilderness; it is a child of the wilderness.

Perhaps it's the canoe's close fit with the wild country that brings out the poetry. Perhaps, too, it's the silence, a subtle treat that backpackers taste only when they stop and put down their packs. On a flatwater expedition there's no crunch of pebbles underfoot, no roots to trip over, no rattling of gear, no jarring up-and-down movement—just the soft, liquid gurgle of paddles pulling through the water in unison.

Over the years, I've shared canoes with business executives and Bible sellers, farmers and philosophers. Almost without exception they soon cease their chatter, hypnotized by the rhythm of the paddle and the gentle balm of the wilderness around them.

The silence of a canoe enables you to come into contact with wildlife you might never see on a hike or a backpack trip. I've drifted within canoe's-length of a feeding cow-moose, and come nearly as close to a family of curious otters. Beavers have swum unperturbed beneath my keel. A sudden bend in a small river has brought me nearer than I want to remember to a black bear and her two cubs.

Flatwater skills are fairly easy to learn. Three or four basic strokes and some practice with an experienced canoeist will get you started. The person in the bow provides forward power, using rhythmic strokes that draw on the muscles of the back as much as the arms. A bowman with a steady swing is a partner to cherish, because a smooth tempo is the secret to tireless paddling.



TOM BEAN/DPK PHOTO

Lay down your load and let the miles drift by.

The stern paddler steers, drawing the paddle through the water in the shape of a J to keep a straight course. If flatwater paddling becomes too tame as your skills develop, you can move up to the more technical challenges of whitewater, which requires mastering a few additional strokes and demands concentration rather than contemplation.

Most canoes are actually less tippy than they at first appear, but like learning to ride a bicycle, getting comfortable takes practice. The best place to begin canoeing is in an area of small lakes or calm rivers, where you won't be confronted by wind and dangerous rapids. Don't push too hard—more than 15 miles a day will seriously limit your ability to enjoy the wilderness. The first time you venture out you might try a guided trip, which will give you a good introduction to proper equipment and techniques for safe canoeing.

To be honest, canoeing's romance and tranquility do not come effortlessly. Wilderness paddlers pay their dues in sweat and aching muscles. A canoe can carry three weeks of supplies more easily than your back can, but the boat still doesn't move itself. And then there are portages, those fish-out-of-water woodland treks that you take while wearing your canoe like a hat to link the navigable waters along your route.

Most novices shudder at the thought of slinging a 16-foot canoe upside down on their shoulders and prefer to portage the gear-filled packs. But I find that carrying the canoe is actually the easiest part of portaging. A well-designed canoe rides with its weight directly over your

shoulders, and its length adds balance to your stride.

In contrast, canoe-packs (also called Duluth packs) are shapeless, waterproof sacks intended primarily to fit low in a boat. On a portage they slump down your lower back, pressing assorted hard objects into your spine. Some canoeists opt for a traditional wooden kitchen box known as a wanigan, an instrument of torture carried by a single leather strap across the forehead. Not surprisingly, few canoeists consider portaging part of their sport's romance.

Since most paddlers travel in twosomes, they can ease their burden by carrying the canoe together and backtracking for their gear. However, this method is much slower than having one partner haul the boat while the other totes the supplies.

Your choice of canoe can help take the pain out of portaging. Aluminum canoes are popular with rental agencies because they're tough, but they also tend to be heavy, cold, and noisy. Fiberglass boats are a bit lighter, and expensive canoes made from Kevlar combine very light weight (40 to 55 pounds) with durability. Either 16- or 17-foot models are adequate for most multiday treks. A carved shoulder yoke instead of the standard center thwart (crosspiece) eases portages, or you can use a life jacket as padding.

Choose high-quality paddles; hardwood ones with the traditional otter-tail shape serve nicely for flatwater expeditions. Lastly, don't skimp when buying a life jacket. In the wilds it does more than keep your head above water. If you capsize, it should soften the impact of underwater rocks. In cold weather it becomes an extra layer of warm clothing; in camp it's a cushion or footrest beneath your sleeping bag.

To get the most from wilderness canoeing, learn all you can about the history and ecology of the area you're traveling through. Read the journals of those who have gone before, and keep one of your own. Paddle alone into the calm once camp is set up and listen to the poetry. You may discover that you too have a touch of the romantic. ■

RON REID *is co-author of* Canoeing Ontario's Rivers *(Sierra Club Books, 1986).*

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What restrictions apply to taking dogs on national-park trails? (Scott Hansen, San Diego, California)

If you bring your dog to a national park, it may not be allowed beyond the parking lot. Even then, Fido will have to stay on a leash.

Some parks, such as Rocky Mountain National Park in Colorado and Yosemite National Park in California, allow dogs in drive-in campgrounds and picnic areas, but letting them run around in the backcountry can net you a $5,000 fine, six months in jail, or both.

The rules in national forests and designated wilderness areas tend to be more lenient. Except for official swimming areas, you can take your dog just about anywhere as long as it's under control. In some places that means caged or on a leash shorter than six feet long; in others, simply within calling distance. Check at the ranger station for the rule that applies and for any other restrictions before you set out.

Wherever you bring your dog, it must be able to behave in the presence of wildlife and other dogs. Squirrel chasers, skunk hunters, fighters, and compulsive barkers quickly wear out their welcome, and yours.

Are indigenous forests or crops cleared to grow bananas for export to the U.S., and if so, what are the environmental consequences? (Rich Feldman, Binghamton, New York)

So-called banana republics in Central and South America, which supply the entire U.S. banana-import market, have grown the fruit only since the early 1800s, when Spanish ships traveling from Africa brought the region its first banana seeds. Taking advantage of cheap labor and prime farmland, an alliance of local elites and U.S. investors built banana production into one of the largest agricultural export trades in Latin America.

ROBERT KOPECKY

In economies that are dependent on several agricultural exports, it's difficult to measure how much banana production alone contributes to environmental problems. In Central America, for example, governments have ceded more than 85 percent of the region's best farmland to corporate growers and cattle ranchers, forcing peasants onto marginal lands. Pushed primarily by an expanding cattle industry, this migration has cut wide swaths into rainforests, resulting in dramatic soil erosion.

A largely unregulated pesticide industry that grew up around the export trade also threatens soil productivity, food crops, and fish and wildlife along Central America's waterways. An estimated 75 percent of the pesticides used are banned or restricted in the United States.

As the price of agricultural exports has declined relative to the cost of imports from industrialized countries, the exporting countries find themselves stuck in a cycle of clearing more land for export crops, depleting more soil nutrients, applying more chemicals, and falling deeper into debt. Without basic changes in the export-oriented development model, the cycle seems destined to repeat itself.

Are old batteries hazardous to the environment? (Alexander Stephens, St. Louis, Missouri)

Each year Americans throw away 2.5 billion pounds of household batteries containing mercury, cadmium, lead, lithium, manganese dioxide, silver, nickel, and zinc. Although there is no evidence that these metals leach into landfills, scientists are concerned that burning them in incinerators releases toxic chemicals into the air.

The Environmental Protection Agency was worried enough about batteries to require that businesses dispose of them as hazardous waste; however, no regulations exist for batteries used at home, even when they're the same kind.

The Vermont/New Hampshire Solid Waste Disposal Project is among a handful of organizations in the United States that collect used batteries. Expensive metals such as mercury, silver, nickel, and cadmium are extracted from batteries and resold; scrap materials and alkaline batteries are buried in a hazardous-waste landfill. San Francisco plans to begin a battery-recycling program this year.

Using nickel-cadmium rechargeable batteries offers one way of keeping metals out of the waste stream. They cost about three times as much as common alkaline batteries, but can be recharged up to a hundred times. ■

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