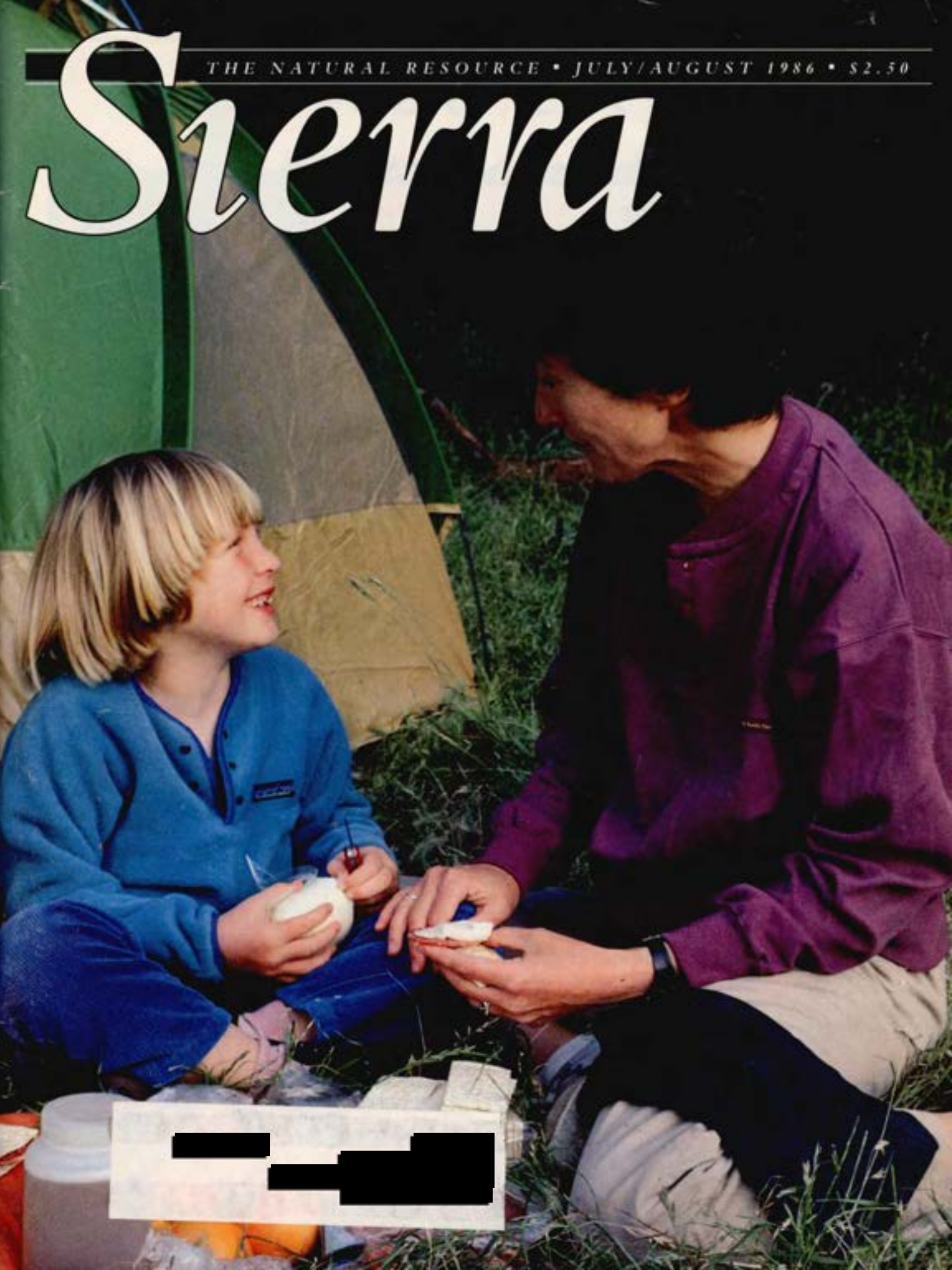


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# Sierra

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## LETTERS

### SIERRA'S NEW DESIGN

Congratulations on the new look for *Sierra* magazine. The layout and graphics are really eye-catching. The magazine is much more inviting to read, and the new typeface and additional white space per page are most inviting to the eye. A real delight.

Rev. Lawrence J. Delonay  
Bloomfield Hills, Mich.

I can understand the reasons why you want to make *Sierra* commercially successful, but the more it becomes a glossy general-purpose magazine, the less I want to read it.

Sally Raisbeck  
Kahului, Hawaii

Your new layout and format are a vast improvement. The magazine is more visual, readable, and easier to digest. Good work.

Larry Silverman  
Hoboken, N.J.

Congratulations on the new *Sierra*! I skimmed through the magazine when it first arrived, not realizing that it had



been reformatted. My first impression was, "Is this the same magazine that I've been receiving all this time?" It sure looks good.

Maryanne Daugherty  
Hesperia, Calif.

If I wanted to subscribe to a magazine with the flash of *USA Today*, the insight of *People*, and the intellectual depth of *The National Enquirer*, your revision of *Sierra* would suit the bill. A hearty thumbs-down on your changes.

Tim DeRoche  
Clovis, Calif.

I really like the magazine's new look—especially "Hot Spots" and "Grassroots Profile."

I suspect it is too easy for many of us to become embroiled in our own local conservation issues, or to rally to the cause of a national one such as the Alaska lands or Superfund bill at the expense of a wider awareness.

In most cases I don't have the time or money to help with other local efforts, but just knowing about them, their successes and failures, provides inspiration and perspective and suggests new techniques for tackling issues close to home.

I also enjoyed reading about William E. Green, "The Irascible Savior of Assateague Island." It's nice to know that one person with a vision and the dedication to realize it can make a difference.

Dave Grebner  
Peoria, Ill.

### THE BIG A IS DEAD

In March/April's "Hot Spots" an article appeared regarding the Great Northern Paper Company's application for a permit to build a dam at Big A Falls on the West Branch of the Penobscot River in Maine. The end to the battle came on March 13, when Great Northern withdrew its application. I was concerned lest you leave your readers with an inaccurate impression of the status of the proposal.

Beth A. Nagusky  
Litchfield, Maine

### ANOTHER FACET OF THE JEWEL

Tom Turner's mention of Montana's Jewel Basin Hiking Area ("Rush Hour in the National Forests," May/June 1986) was terse, and for that reason somewhat misleading.

As Turner reports, Washington con-



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ervationists propose protecting several roadless areas through the forest planning process, and are using the Jewel Basin Hiking Area as an example of how that might be done. However, Turner failed to make two important points. RARE II wilderness legislation has been passed for Washington, so special designation through the forest planning process represents the best way to temporarily protect released lands. But similar legislation has not been passed for Montana, and Montana conservationists advocate wilderness designation for the 15,368-acre Jewel (along with some 50,000 acres of adjacent roadless lands).

We seek congressional wilderness designation for the Jewel and its setting because we have learned through bitter experience that sooner or later administrative protection breaks down.

We wish our colleagues in Washington luck—both with securing administrative protection and making it work. In the meantime, however, we will continue our efforts to have the Jewel Basin added to the wilderness system. As we have found, the grace of the Forest Service is not protection enough.

*James R. Conner, Chair  
Flathead Group, Sierra Club  
Kalispell, Mont.*

### ACID RAIN

"The International Acid Test" (May/June 1986) ignores the demonstrated record of U.S. emission reductions through compliance with the Clean Air Act. The United States, in fact, leads the world in air-pollution control.

The Environmental Protection Agency reports that from 1973 to 1984 total sulfur-dioxide emissions dropped 26 percent. Electric utility SO<sub>2</sub> emissions were down 16 percent, despite a 70-percent increase in coal use. The United States operates 134 scrubbers, and 80 more are in planning or under construction. Canada has none. U.S. electric utilities are spending \$10 billion a year to limit air pollution.

*John J. Kearney, Senior Vice-President  
Edison Electric Institute  
Washington, D.C.*

Anne LaBastille's article on acid rain was excellent. The United States' pro-



crastination is inconsiderate to our neighbors and perhaps comparable to the Soviet Union's carelessness in power generation.

As you point out, the Scandinavians' care for their natural environment has prompted effective action against acid rain. Sweden in particular has made great progress through efficient use of energy along with the decision to phase out nuclear power.

Our country should approach acid rain with a similar balance of technology. Managing our demands for electricity and oil heating can be a major factor in controlling overall acid emissions. Electric hand-dryers do not necessarily save trees.

Roger A. Peterson  
Minneapolis, Minn.

#### SURPRISES, MOSTLY BAD

Ben A. Franklin's excellent article on chemical pollution in the Kanawha Valley of West Virginia ("In the Shadow of the Valley," May/June 1986) neglected to mention that until recently West Virginia had the highest unemployment rate in all 50 states. Given this circumstance, is it surprising that Kanawha Valley residents defend an industry whose emissions injure lung tissue and rot the arms off marble statues?

If environmentalists haven't learned a lesson from our three-year fight to enact an acid rain control bill during a coal-mining recession, the Kanawha Valley is proof that the Sierra Club will eventually have to address income distribution problems, job security questions, plant closings, and other economic issues to keep doing effective environmental work.

Unless we find ways to lessen the pain that economic dislocation brings to states like West Virginia, the Kanawha Valley won't be the last place where a clean environment takes a back seat to the "jobs issue."

John Andrews  
Washington, D.C.

I do not understand why you chose to illustrate Franklin's article on toxic-chemical pollution emissions with photographs of metals plants, and why you picked a photograph of a steel mill that is nowhere near the Kanawha Val-

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ley. Did you think nobody would know the difference?

Robert F. Gates  
Charleston, W.Va.

*The Editor replies:* Ignorance is no excuse (and it certainly isn't bliss), but we were led to believe the photos used in the article were from Institute, W. Va., and depicted chemical plants. Had we known otherwise, we certainly would not have published them. Our apologies to Mr. Gates and to the rest of our readers.

### THE GOOD TIMES DIDN'T ROLL

I was dismayed to see the advertisement on the back cover of the May/June issue. Eastpak's photo showing a littered beach with a cassette stereo in the background and a young man on his way to "good times" is a strong message condoning bad treatment of and disrespect for the outdoors and other people who want to enjoy it. I can't count the number of times I've been on beaches or in the mountains wanting to enjoy the beauty of the outdoors, only to have someone's portable stereo at high volume nearby, or litter from someone before me spoiling the view. The "wild life" portrayed in that ad is not the type that is needed in the wilderness!

I belong to the Sierra Club because it works to change such destructive attitudes about the out-of-doors. I hope you will do your best to see that such irresponsible advertising doesn't appear in the pages of *Sierra* again.

Megan Johnson, M.D.  
Kalamazoo, Mich.

*To all Sierra readers:* I was sorry to learn of your discontent with our ad in your May/June issue. The ad was intended to portray an exaggerated and purely humorous situation, and was not meant to be taken literally. In no way did we mean to show disrespect for the environment or imply that true cyclists behave in such a manner.

We at Eastpak respect the outdoors and a clean environment, and admire the efforts of the Sierra Club. Please accept our apologies for any offense the ad may have caused.

Mark Goldman, President  
Eastpak  
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## MOUNTAIN MYSTERY

Were Sir Edmund Hillary and Sherpa Tenzing Norgay really the first party of climbers to conquer Mt. Everest when they reached the summit in 1953?

That's the question the Mt. Everest North Face Research Expedition will attempt to answer this fall when 16 climbers search the mountain's north face for the cameras, artifacts, and possibly the bodies of British climbers George Mallory and Andrew Irvine, who set out to scale Everest in 1924.

Mallory and Irvine made their way up the north face of Mt. Everest from Tibet, reaching their highest camp on June 7. (Hillary and most other climbers have scaled Everest's south face, on the Nepalese side.) On June 8 a

fellow climber spotted them en route to the summit, "going strong for the top" in what Mallory had described as "perfect weather for the job." That was the last time the pair was seen, and the beginning of a mystery that has spanned six decades.

Tom Holzel, leader of this fall's expedition, has researched the Mallory-Irvine climb extensively, and believes Mallory made it to the top. According to Holzel, at least one of the two was seen on the Second Step, a rock cliff 250 meters below the summit. For years many climbers disputed this theory, believing that ascent of the Second Step was impossible. But in 1960 a Chinese expedition proved otherwise when it followed the Mallory route by finding



*Mallory & Irvine leaving the North Col on their last climb, 6 June 1924*

a path that can't be seen from the base, according to Holzel.

Holzel thinks Mallory may have sent Irvine back down, then attempted to forge on to the summit alone using both their oxygen supplies. He believes Irvine's body may lie below the summit on a snow terrace at 8,200 meters. In fact, in 1980 a Chinese high-altitude porter mentioned seeing an "English dead" dressed in old-fashioned clothing on a snow terrace at 8,100 meters. Because no one else is known to have died in that location, and because only Chinese climbed that high on the

north face of Everest between 1924 and 1981 (when Tibet was opened up to foreign climbers), Holzel believes the body must be that of Mallory or Irvine.

If he is correct, Irvine's camera should hold a record of the climbers' last three days together. Any film found on Everest will be extremely dehydrated, however, so experts at Eastman Kodak are researching ways to develop the film on the mountain before it is exposed to above-freezing temperatures.

The expedition is set for September and October, post-monsoon months when high winds are likely

## A GREEN THUMBS-UP FOR GARDENING

According to the National Gardening Survey conducted by the Gallup Organization, eight out of ten U.S. households participated in some form of gardening in 1985, including lawn care,

growing vegetables, or cultivating flowers. The survey also found that the number of households that garden is greater than the number that jog, play golf, or sail combined. Some of America's favorite gardening activities are illustrated here by numbers and percentages of participating households.



to keep the mountain clear of snow. Says Holzel, "We will look above the Second Step for old oxygen masks. If we find any pre-World War II artifacts, that will prove that Mallory did indeed climb above the Second Step and most likely reached the summit."

—Anne Milner

## ACCIDENTALLY ON PURPOSE

The recent catastrophe at the Chernobyl nuclear power plant in the Soviet Union raises disturbing questions about the safety of similar facilities in the United States—especially the Hanford nuclear reservation in Washington.

Built to make plutonium for nuclear weapons, the reactor at Hanford—like the Soviet reactors at Chernobyl—lacks a concrete containment structure to prevent the spread of radiation in case of an accident. Ironically, the Hanford facility is one of three sites under consideration by the Department of Energy (DOE) as a repository for high-level nuclear waste. As though these facts weren't troubling enough, recently released

## BIGHORN RETURN TO YOSEMITE

Bighorn sheep had disappeared from Yosemite National Park by 1914, the victims of habitat destruction, hunting, and disease. But this summer, visitors to the park may have a chance to see bighorn once again.

In early March, the California Department of Fish and Game, the National Forest Service, and the National Park Service collaborated on a plan to reintroduce 27 bighorn sheep to a portion of their former range. The sheep belong to one of the two remaining herds of original Sierra bighorn. They were captured on Sand Mountain on the east side of the Sierra Nevada and helicoptered north to Lee Vining Canyon near Yosemite.

Park Service biologist Les Chow, who is conducting a four-year study of the relocated animals, reports that three adults and four lambs died shortly after their release. He points to the aftereffects of a three-day storm and problems of adjusting to different forage as the causes. Two other lambs are unaccounted for, but Chow says two healthy baby sheep have been born. The remaining 20 sheep are now in stable condition.

The effort to bring bighorn back to Yosemite began in 1983. Project participants identified Lee Vining Canyon as the best site, because it was formerly part of the bighorn's range and has an abundance of winter forage.

"Sierra bighorn are members of a subspecies that ranges from British Columbia to the southern end of the Sierra Nevada," Chow says. "We hope the Lee Vining sheep will form a healthy Yosemite herd to ensure the Sierra lineage."

—Lewis Kemper and Jacqueline A. Steuer-Kemper

DOE documents show that Hanford was the site of a deliberate Cold War release of radioactivity almost 40 years ago.

In December 1949, just after the Soviet Union detonated its first nuclear bomb, a secret U.S. military test of instruments designed to monitor Soviet nuclear

explosions released 5,500 curies of radioactive iodine 131 over portions of Oregon and Washington. The intentional release occurred when the cooling period for uranium fuel produced at Hanford was shortened in a panicky attempt to produce large amounts of plutonium for bombs quickly.

The DOE says there is no way to tell whether ill health effects resulted from the experiment. But Dr. David Tauben of Washington Physicians for Social Responsibility—one of several groups

## SCORECARD

### WINS

- On April 30 the House passed the Nevada Wilderness Protection Act, which would preserve 592,000 acres, including a 174,000-acre Great Basin National Park and Preserve.
- In May a California court of appeals ruled that the state's Water Resources Control Board had failed to protect water quality in the Sacramento-San Joaquin Delta and Suisun Marsh.

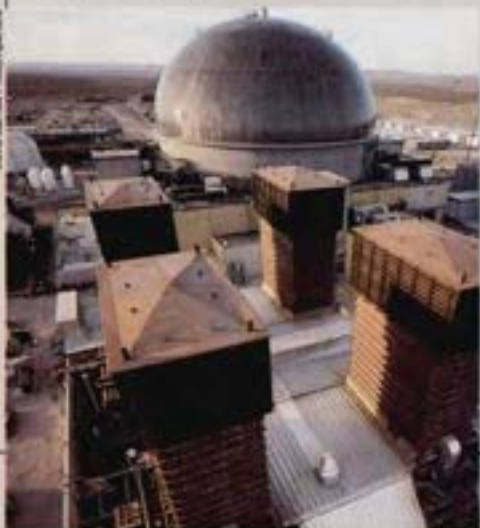
### LOSSES

- In April the Senate authorized the 130,490-acre Garrison Diversion Irrigation Project in North Dakota, eliminating a plan that would have protected the James River Basin and its wildlife refuges.
- In April the House rejected a Senate offer to reauthorize the Superfund toxic-waste cleanup law. The bill incorporated strong elements of last year's House version.

### DRAWS

- The National Marine Fisheries Service designated critical habitat for the endangered Hawaiian monk seal in April, but the Sierra Club continues to push for greater protection.

that obtained previously classified DOE documents pertaining to the release—says benign and malignant thyroid tumors and other illnesses would most certainly have occurred. According to Tauben, just seven millicuries of radioactive iodine 131 is enough to cause hypothyroidism in half the people exposed. Within the next five years these people will also require ongoing medical attention for psychiatric



and cardiac problems. Moreover, Tauben says, exposure to even that small an amount of radioactive iodine 131 is "absolutely contraindicated for pregnant women" because it can cause cretinism in the developing fetus.

Disclosure of the deliberate release has sparked a round of investigations: A Washington/Oregon committee appointed by the states' governors is looking into the matter, as is a House Energy and Commerce subcommittee. The Centers for Disease Control in Atlanta is conducting a six-month analysis of existing data.

"DOE never did follow-up studies of the population," Tauben says of the

incident. "It's like walking into a room with your eyes closed and saying you don't see anything. DOE hasn't looked."

—Marlene Edmunds

### POOP DECK DUMPING

**T**radition holds that if visitors to Hawaii cast a lei into the froth of their departing liner's wake, they can tell from its progress toward or away from shore whether they will return to the islands. Today it seems liner passengers are leaving other souvenirs in their wake, and local waters are frothing indeed.

Reports show that American Hawaii Cruises, Inc., the state's only cruise-ship



line, has discharged raw or partially treated sewage into several of the state's harbors since 1984, including Nawiliwili on Kauai, Kahului on Maui, and Kailua and Hilo on the Big Island.

In January, Hawaii's Department of Transportation, which is responsible for monitoring saltwater quality, fined the company \$1,000—the maximum penalty allowed by law—for dumping raw sewage into the Big Island's Kailua Bay.

An analysis of harbor water by the state health department showed a coliform bacteria count of 240,000 parts per million—600 times the level the state considers safe—near one ship docked about 500 yards offshore. At the same time, two residents filed a class-action suit against AHC for polluting the scenic bay, home of the Ironman Triathlon.

Despite the fine, lawsuit, and claims by the cruise line that faulty on-board sewage-treatment plants would be repaired, the company is allegedly still polluting at least one state-run harbor. State representative Virginia Isbel of Kona claims that she continues to receive reports of fecal pollution in the harbor when the company's

ships are docked there.

Representative Isbel has introduced tougher anti-pollution legislation that would increase the maximum fine for violations from \$1,000 to \$25,000, and require the state agencies responsible for monitoring to disclose violations that persist for more than a year.

Isbel's efforts are being watered down by the Reagan administration, however. The Centers for Disease Control (CDC) has decided that as of April 30 the government would abandon regular inspection of sanitary conditions aboard cruise ships in favor of a self-inspection system. Why the switch? The CDC claims: "Because of the heightened awareness of and attention to shipboard sanitation on the part of both the international cruise ship industry and the traveling public, continued routine inspections of these vessels by government inspectors are not necessary." —Tim Ryan

### RONALD REDWOOD?

**I**n April the Los Angeles County Board of Supervisors voted to urge Congress to rename Southern California's Angeles National Forest the Ronald Reagan National Forest.

Republican supervisor Pete Schabarum introduced the measure, citing the President's "special love for the outdoors" and his long-time association with California as reasons for the proposed name change. Kenneth Hahn, the only Democrat present who voted for the proposal, suggested that the President might be more open to expanding the nation's recreation areas if a forest were named after him.

President Reagan is, to put it mildly, not known for his support of forestland preservation. As one letter to the editor of the San Francisco *Chronicle* pointed out: "President Reagan, when he was governor, said that if you have seen one redwood you have seen them all. Perhaps it would be more fitting to name one redwood the Reagan National Forest." —Anne Milner



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bear country during her menstrual period?

The Park Service brochure plainly states that "the odors of menstruation attract bears." The Forest Service advises women to stay out of bear country while menstruating.

The theory that there is a correlation between menstruation and bear attacks was first advanced in 1967, following Glacier National Park's infamous "night of the grizzlies." On August 14, in an extremely unlikely sequence, two women in different areas of the park were killed by different bears. One woman was carrying tampons; the other was menstruating.

While grizzly bears usually avoid humans, it's well known that food and other odors can attract them. An investigation into the cause of the 1967 attacks that considered the odors of menstruation, cosmetics, and food as possible factors proved inconclusive.

Bear authority Charles Jonkel of the University of

## FOOD FOR THOUGHT

Ten trillion mosquitos are expected to hit the United States this summer—enough to fill the Grand Canyon, or make a chain of mosquitos from Earth to Venus and back. If each skeeter were a penny, together they could pay off the federal deficit and have money left over.

Mosquitos torment animals and birds as well as people, and that's something of a blessing for our species: Otherwise each American would be scratching 100 new bites a day. On the average, every 30 seconds

someone in the world dies from an illness stemming from the bite of a female mosquito. (The males are vegetarians.)

If you think you can get away from mosquitos, you're wrong. Because they can survive temperatures from freezing to 100-degree heat, their range covers most of the Earth.

On the other hand, you don't have to be a sitting duck. Good insect repellents confuse mosquitos' sensors, making them unable to determine whether you are a tasty morsel or just a tough old shoe. — Anne Milner



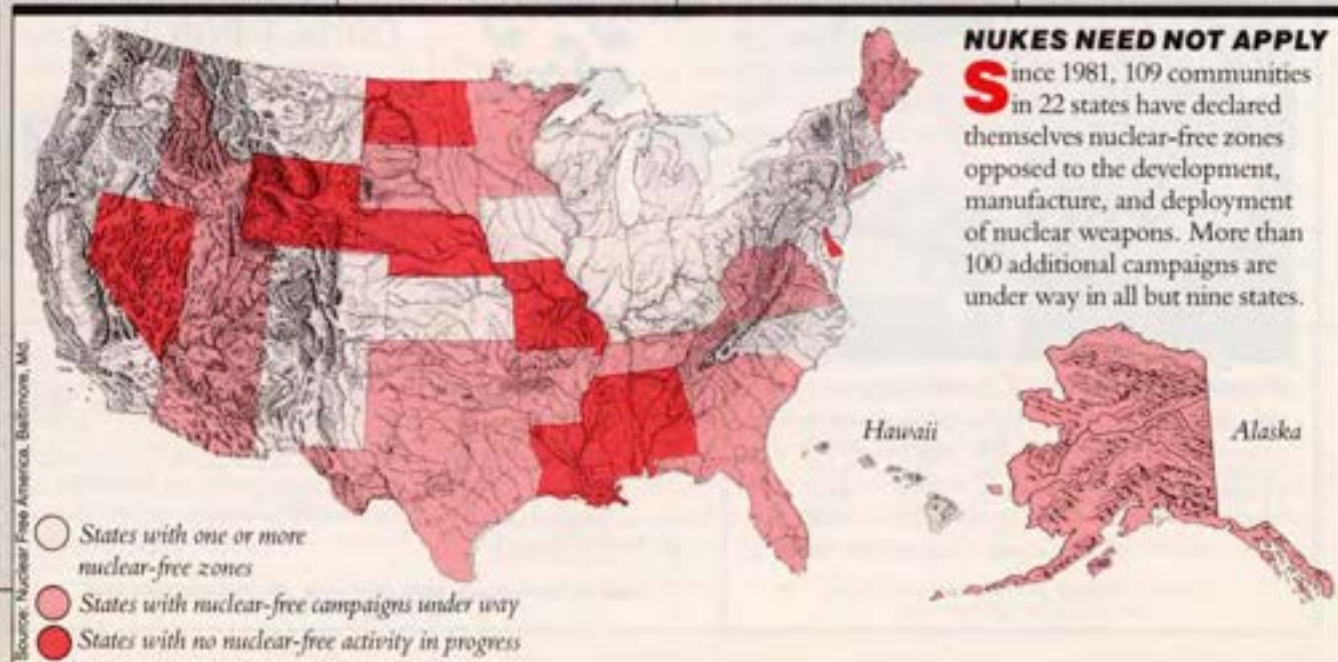
Montana's Border Grizzly Project supervised a 1980 study that showed polar bears to be powerfully attracted to menstrual odors. "Regardless of sex or age, bears were attracted to the pheromones of menstrual blood over other attractants," he says. But wildlife biologist Steven Herrero, author of the book *Bear Attacks* (Winchester Press, 1985), says he still be-

lieves the most important factor in the 1967 attacks was "the prior experience of both bears with human food and garbage."

Despite the lack of firm evidence of a link between menstruation and bear attacks, Yellowstone backcountry ranger Ann Marie Chytra advises women to use tampons rather than pads in bear country, and not to bury used tampons

or throw them in pit toilets. Instead she recommends wrapping them in aluminum foil, placing them in Ziploc bags, and storing them just like food or garbage—out of reach of bears.

Ultimately, the decision to backpack in grizzly country during one's menses is a personal one. Dr. Mary Meagher, a Yellowstone research biologist, says of menstruation, "All other





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factors being equal, it may determine who becomes a victim." But after 26 years of fieldwork in Yellowstone, she admits, "It hasn't kept me out of the woods."

—David A. Smith

### BACKCOUNTRY BUG COMES TO THE CITY

**T**he ubiquitous protozoan that plagues the digestive tracts of backpackers who drink untreated water—*Giardia lamblia*—has been making an unwelcome appearance in municipal water supplies.

Symptoms of giardiasis include nausea, diarrhea, and flatulence. Since 1965 more than 30 outbreaks of the debilitating disease have been attributed to polluted city water supplies in states from Arizona to New Hampshire. Following an outbreak of more than a thousand cases of giardiasis

as five of the microscopic cysts per gallon of water can cause giardiasis.

Chlorination does not always kill *Giardia*, especially if the water to be treated is cold, turbid, or highly alkaline. Boiling or filtration works, but the EPA's Office of Drinking Water estimates that more than 65 million people are served by surface water supplies that are simply chlorinated or left untreated. These include residents of major cities such as San Francisco, New York, Boston, and Seattle.

The Safe Drinking Water Act does not require monitoring for *Giardia* or treatment to remove it from water supplies, although amendments are being considered. The EPA plans to propose mandatory filtration of city water supplies this year, with implementation by 1990.

Mandatory filtration is a controversial subject. Opponents argue that more careful monitoring and disinfection will prevent the disease better than costly filtration plants. But proponents prefer to err on the side of safety. Wesley Pipes, chair of the civil engineering department at Drexel University in Philadelphia, says, "The use of both filtration and disinfection produces a much safer water supply. I believe most people would prefer an increase in [water] rates to the risk of contracting giardiasis."

—Ann Schimpf

last December, 350,000 residents of Pennsylvania were advised to boil their tap water before drinking it.

*Giardia* is a determined critter. It exists as a hard cyst, which when ingested becomes infectious. As few



**S**alt may be harmful to your health in more ways than one. The Baltimore-based Nuclear Free America campaign has launched a boycott of Morton brand salt because Morton Thiokol, the largest salt company in the world, is also one of the top 50 manufacturers of nuclear weapons components.

Morton Thiokol makes solid-rocket boosters and solid fuel for nuclear missiles. It is also a prime contractor for anti-satellite weapons, the Strategic Defense Initiative, and the space shuttle. Morton's aerospace group, which works under Defense Department and NASA contracts, accounted for half the company's revenues in 1985, according to Nuclear Free America.

The company's environmental and safety records are also spotty. In 1983 the government spent \$2.7 million in Superfund money to clean up one of the company's New Jersey hazardous waste dumps, which had contaminated local groundwater supplies. The Justice Department sued the company to recover costs.

In 1984 and again this year, two little-publicized explosions occurred at Morton facilities in Promontory Point, Utah. In the earlier accident, 14 employees were injured in an explosion at a rocket-fuel research lab. Early this year an explosion took place at the oxidizer/drier building at Air Force Plant 78; fortunately, no injuries were reported. The facility had been used in the manufacture of solid-rocket motors for Trident ballistic missiles.

Nuclear Free America says the current boycott won't be the first time salt has been a vehicle for social change. The campaign recalls Gandhi's salt march to the sea, which inspired Indians to rise up against British rule by challenging the law forbidding them to make salt. And during the Civil War, some Union states refused to buy salt mined by slave labor in the South. —Anne Milner

### FIELD NOTES

"I sometimes wonder how this spare, bony plateau became so hallowed. It has to do, I suppose, with the lack of clutter. Here my imagination is free to take off because there are no impeding structures. I crave the wild silence . . . the aloneness I am bequeathed as I wander across the becalmed sagebrush expanse. And I am awed by the reduction of detail in a way that I could never be awed by the cathedral at Chartres, the Taj Mahal, or an Apple computer." —from *On The Mesa*, by Jon Nichols

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D. Alan Claxton

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## Détente on South Moresby

*Tensions over logging these remote islands have eased, thanks to a recent move by the provincial government. But all is not well.*



*A bald eagle's nest against a backdrop of clearcuts—South Moresby's dilemma in a nutshell. But the loggers' chainsaws are silent for now. After a decade of delay, the government of British Columbia is talking about national park status for two thirds of these spectacular islands.*

**Sarah Locke**

**M**ILLIONS OF VISITORS are heading to Vancouver, British Columbia, this summer to visit the world's fair. When they arrive they are exposed to a massive public relations campaign that advertises the glories of "Super, Natural British Columbia." But even as

visitors look at striking photographs of British Columbia's natural assets, the future of a chain of islands called South Moresby—the province's greatest international treasure—is still being threatened by logging.

South Moresby is the name for the southern portion of the Queen Charlotte Islands, which lie 60 miles off the coast of central British Columbia. Biol-

ogists believe parts of the archipelago escaped the scourings of the last ice age, making it an evolutionary showcase of unusual plants and animals. Some call it the Canadian Galapagos.

South Moresby is considered the most stunning part of the Queen Charlotte chain. Called "Gwaaiia Haanas" ("Place of Wonder") by the Haida Indians who have lived there for 10,000 years, it is one of only 12 areas in the world that meet the United Nations' requirements for World Heritage status for both its natural and cultural features. The region's rocky headlands, alpine meadows, and magnificent temperate rainforests have been recommended for national park status by Canada's Minister of the Environment.

The provincial government stubbornly resisted the park idea until May, when the first sign of progress came. After 12 years of controversy, the British Columbia government announced that it was willing to negotiate with the federal government about establishing a national park on South Moresby.

Environmentalists are pleased—but skeptical. Since British Columbia's park proposal does not include Lyell Island, the visual centerpiece of the South Moresby area, logging could continue there and on several of the smaller islands. Environmentalists also question whether the federal and provincial governments will be able to agree on the park's price tag, boundaries, and management. If they don't settle these issues during a two-year negotiating period, South Moresby could become a provincial recreation area in which logging could be allowed.

The provincial Ministry of Forests controls 86 percent of British Columbia's land. Logging has been the province's lifeblood for decades, but today the regional forest industry is in a crisis. Depressed timber prices are partly to blame, but so is mismanagement. Trees

have always been cut faster than they've been allowed to grow back, and reforestation has only recently become a priority. As a result, stands of virgin timber have become increasingly valuable to both logging companies and environmentalists. The magnificent coastal forests, like those on South Moresby, are the most coveted of all.

Paul Pritchard of the U.S.-based National Parks and Conservation Association (NPCA) believes concern about the islands should go beyond national borders. "They are an important staging area for migrating marine mammals, birds, and other animals. Clearcutting in the rest of the province has been so devastating, they're about the only safe haven these animals have left."

During the ten years that British Columbia Premier Bill Bennett has been in office, environmentalists have had frequent confrontations with him but have won very few battles. Bennett has avoided making a decision on South Moresby, appointing one committee after another to study the area while the logging continues. Frustrated environmentalists had planned to make South Moresby an election issue, but they were caught by surprise in May when Bennett first announced the national park negotiations and then resigned two days later, apparently discouraged by his declining popularity.

With a new premier to be chosen in

July, environmentalists are hoping for an era of cooperation and conciliation in provincial resource management. "It's an exciting time—a time to build our park system," says Sharon Chow, director of the Sierra Club's Western Canada Chapter. "If we don't succeed, much of our remaining wilderness could be destroyed by logging over the next two years."

The Haida, who have played a central role in the effort to save South Moresby, have more immediate concerns than who the next premier will be. They have claimed aboriginal title to their homeland and are determined to stop further logging on Lyell Island until the federal court hears their case. Members of the tribe peacefully blockaded logging roads when the province granted cutting permits on Lyell Island, and 72 were arrested for contempt of court when they refused to leave the site. Of those, 11 were later summoned to appear in British Columbia's Supreme Court, where they were found guilty. Their six-month jail sentences were suspended.

"We're concerned about the government's lack of respect for the Haida," says Thom Henley, a non-Indian who runs British Columbia's Islands Protection Society. Last winter Henley organized a "Save South Moresby" train caravan to demonstrate grassroots support for these islands. Some 10,000 people turned out at rallies along the train's



Haidas blockading a logging road on Lyell Island: The tribe is on the front lines of a battle with the British Columbian government over protection of South Moresby's forests.

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path across the nation from east to west.

"We're delighted to see that the government has come as far as it has," he says. "But if the logging companies can be compensated for two thirds of the area, why can't they be compensated for the additional one third?"

The International Committee to Save South Moresby, which includes the NPCA, the Sierra Club, Friends of the Earth, Defenders of Wildlife, and Greenpeace, is planning a public education campaign to encourage the new provincial government to protect all of South Moresby as a national park. The NPCA's Pritchard heads the group.

"We're offering the British Columbian government our wholehearted

support, but the fight is not over until the park sign is on the gate," Pritchard says. "You don't have to go to South Moresby to see what has been done to British Columbia's resources. There are huge clearcuts right around Victoria and Vancouver. We hope the people who go to British Columbia will see both sides—not only the artificial world at the fair, but also the destruction of natural resources."

When visitors to Expo are confronted with the coalition's facts, he continues, "we think they'll decide it's time for action in places like South Moresby."

SARAH LOCKE is a freelance writer in Vancouver, B.C.

### CLEAN AIR

## Will Coal Research Clear the Air?

*New technologies to burn coal more cleanly show enormous promise, but they alone won't take the sting out of acid rain.*

Richard Munson

**I**N THE HEART of California's Mojave Desert, eight miles east of Barstow, what utility executives describe as "the world's cleanest coal plant" operates, the showcase of the Cool Water Coal Gasification Program.

The power plant is being heralded by the utility consortium that built it as the most promising long-term solution to the problem of acid rain.

Environmentalists applaud this and other efforts to burn coal more cleanly, but claim utilities are using such demonstration projects to argue against the need for strict emission controls. Dick

Ayers, senior staff attorney with the Natural Resources Defense Council, calls the latest industry rhetoric about clean coal "an attempt to put off the day of doing something about acid rain."

The debate was heightened in March when President Reagan endorsed a proposal to spend \$2.5 billion to develop clean coal technologies. After years of claiming that volcanos and trees cause more pollution than coal-fired

plants, Reagan agreed that the federal government should subsidize industry efforts in this field.

Approximately 1,300 coal-fired plants generate 55 percent of the nation's electricity, and coal remains the nation's most abundant fossil fuel. With the nuclear option battered by cost overruns, many utility executives are looking to coal for future electrical production, often dismissing its contribution to air pollution. They argue that dead lakes are the result of acidic soil rather than polluted rainfall.

Regulators have cautiously embraced three technologies that control emis-



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sions from coal-fired plants, each with its benefits and problems. Switching from high-sulfur to low-sulfur coal is usually the cheapest option, but it threatens to displace thousands of high-sulfur miners in the East and Midwest. Coal washing—cleaning the sulfur from fuel before it is burned—is another inexpensive choice, but current methods withdraw less than half the sulfur found in dirty coal. Flue-gas scrubbing removes up to 90 percent of the sulfur emissions produced by coal-burning plants, but scrubbers use enormous

amounts of water, produce a cakelike sludge that must be carefully buried in landfills, and fail to capture dangerous nitrogen-oxide emissions.

The Electric Power Research Institute (EPRI) is a key center for coal research. This utility-funded group headquartered in Palo Alto, Calif., has committed \$580 million to help develop other clean coal options. Among the most promising is fluidized-bed combustion, whereby coal is mixed with inexpensive limestone and burned above an upwelling flow of air. The limestone reacts with

the coal to capture most of the sulfur. Because the unit operates at temperatures one half to one third lower than those in conventional boilers, it also reduces the output of nitrogen oxides. In 1983 EPRI helped the Tennessee Valley Authority open a pilot 20-megawatt fluidized-bed plant in Paducah, Ky. The idea is now being applied to larger and more advanced facilities.

Coal gasification units are another important option. The 100-megawatt facility near Barstow converts pulverized coal mixed with water and oxygen into a gas. Combustion of the gas drives the main turbine, while water converted into superheated steam during the gasification process spins another engine. At least half a dozen utilities are planning similar electric power plants, all of which show far more promise than the ill-fated projects financed by the government's Synthetic Fuels Corporation to produce liquid or gaseous fuels from coal.

According to EPRI's Tom O'Shea, the Cool Water test facility removed 97 percent of the sulfur from low-sulfur Utah coal and reduced emissions to one tenth of existing federal standards. The plant also cut sulfur output from high-sulfur Illinois coal to about a third the limit allowed by national regulations. O'Shea claims the technology is now ready for commercial development.

Despite positive test results, many utility executives want taxpayers to help finance larger demonstration projects. Thomas Kuhn of the Washington-based Edison Electric Institute, a trade association of private power companies, claims, "Utilities do not have the flexibility to compensate for the financial risk of new technology demonstrations in a manner similar to other private-sector industries."

Environmentalists backed the limited government support for clean coal research offered in the Clean Coal Technology Reserve bill approved by Congress in late 1985. The law has provided \$400 million for commercial demonstrations of acid-rain-control devices. John McCormick of the Environmental Policy Institute believes the program can help resolve the dispute between the Midwest, a major source of pollutants, and the Northeast and Canada, which

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suffer most from acidic deposition. While it should not be used as an excuse for delaying comprehensive acid rain controls, such research "can provide the Midwest the opportunity to rehabilitate many of its aging physical plants," McCormick says.

Many of the Midwest's old, dirty coal-fired boilers were exempted from the Clean Air Act in 1971 because lawmakers assumed the units would gradually be retired. But high construction costs and uncertain levels of demand for electricity have encouraged utilities to extend the lives of their existing plants. According to Chris Flavin of the Worldwatch Institute, upgrading such operations with innovative technologies could improve a facility's efficiency while reducing its emissions.

In April, Rep. Henry Waxman (D-Calif.) unveiled legislation backed by House members from both parties to sharply restrict air pollutants from coal-fired boilers. "It's clear there is a relationship between burning fossil fuels and acid rain," declared Newt Gingrich (R-Ga.), a leading conservative. Gingrich and most environmentalists argue that strict emission controls would promote clean coal technologies more effectively than would multibillion-dollar subsidies.

Bob Williams, a senior research scientist at Princeton University, agrees that "environmental constraints often stimulate technological innovation." Before subsidies were an issue, existing federal regulations spurred industrialists to advance fluidized-bed combustion and develop Cool Water's gasifier.

Williams praises these advances, but complains that current debate over acid rain is too heavily focused on smokestacks and fails to consider alternatives to coal-fired plants. Most utility executives tend to dismiss the fact that when consumers use less electricity to perform the same tasks, power companies burn less coal and emit less sulfur.

"Rather than raising rates to pay for putting diapers on dirty coal plants, a utility should install or finance super-efficient lights, motors, and appliances," says Amory Lovins of the Rocky Mountain Institute.

The debate also ignores thousands of independent power producers who re-

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This new competition, combined with government regulations, has launched engineering demonstrations that confirm the enormous promise of

cleaner coal technologies. But Reagan's \$2.5-billion proposal is a questionable next step. "A commitment of federal money does not ensure the protection of sensitive areas," McCormick warns. Tougher standards—not bigger subsidies—are needed to encourage utilities and industrialists to use new techniques to clean up acid rain.

RICHARD MUNSON, former director of the Solar Lobby, is author of *The Power Makers*, a book on the electric utility industry.

## PARKS

# Canada's Mountain Playgrounds

*A development boom is bringing park visitors more civilized comforts than ever. But what are the grizzlies' options?*

Jerry Kobalenko

**W**ALKING through the town of Banff, Alberta, on a nice weekend is like strolling through the town of Niagara Falls. Souvenir stores do a crisp business selling totem-pole bottle openers, Eskimo carvings, and national park

bric-a-brac. You can buy a house here, play tennis here, and dine very, very nicely. Banff has all the civilized comforts that attract big tourist bucks. Yet it is within a national park—a place where grizzlies roam, a World Heritage site—not an international resort.

Together with Canada's three other

Rocky Mountain parks—Jasper, Yoho, and Kootenay—Banff is facing a development boom. Incredible as it sounds, the four parks already contain three towns, one village, two golf courses, four swimming pools, four downhill-ski areas, 32 campgrounds, 21 back-country lodges and huts, 29 commercial lodges, and more than 350 miles of major highways.

The idea of selling the parks as tourist meccas is nearly as old as the parks themselves. A brochure from the 1920s urges people to visit "Canada's mountain playgrounds." Even then, a railway and the stately Banff Springs Hotel gave well-heeled tourists a chance to enjoy some of the nation's most spectacular scenery in high style.

At the same time, a few farsighted individuals such as J. B. Harkin, Canada's first national parks commissioner, were trying to ensure that the parks would remain unspoiled for future generations. "Constant vigilance is necessary," he said in 1925. In other words, the battle to preserve natural areas from development is never won. No act, no law, no document can ever guarantee the en-

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"Canadians are unwilling to draw any strict limits to park use," says Kevin McNamee of the National and Provincial Parks Association, a Toronto conservation group. "Americans sometimes think we really have our act together, with our park system, our management plans, and our systematic approach. But what we're missing is leaders who'll put their foot down, not just base their programs on the political winds of the day."

Parks Canada, the federal agency responsible for the country's 31 national parks, agrees that its main job is to protect the lands under its stewardship. But political winds have shifted lately against a conservation-first policy, and there has been tremendous pressure to develop the four mountain parks.

Tourism interests, the provincial government, and even Parks Canada itself are the sources of this pressure. It was Parks Canada that in 1971 proposed a plan to turn Banff's world-famous Lake Louise into a posh alpine resort. The idea was eventually crushed by an unprecedented public outcry.

In June 1984, Parks Canada came out with a list of options for the future of the mountain parks. It presented the public with three choices for each option: little or no development; some development; or full steam ahead. For example: Should Banff townsite (A) expand by 32.5 percent within its existing boundaries, (B) grow by 50 percent within those boundaries, or (C) develop beyond its boundaries? For wilderness, it's a no-win situation.

Parks for Tomorrow, a coalition of national, provincial, and regional conservation groups based in Calgary, charges that Parks Canada simply ignored any criticism of its plans for expansion of facilities. Environment Canada, the agency that oversees Parks Canada, issued a report warning that park wildlife is already feeling the stress of too many people and too much development. Public opinion favored a mix of options A and B. Nevertheless, Parks Canada based its draft plan on a mixture of B and C.

Some conservationists see another threat as well: the possibility that the 1988 Winter Olympics will be held inside the park at Lake Louise. Mt. Allen,

near Canmore (a town just outside Banff National Park), is the official choice. But Mt. Allen is in the path of southern Alberta's warm chinook winds, which often raise winter temperatures high above freezing. Dianne Pachal of Parks for Tomorrow fears that at the last minute the Lake Louise locale will be bumped to the front as the only workable alternative—leaving no time for hearings or environmental studies. She says the construction and bustle preceding an Olympic downhill event at Lake Louise would be catastrophic for

the grizzly bears that now depend on the area.

Canada's Minister of Tourism, Tom McMillan, indicated during a speech in Alberta last year which way the political winds were blowing. "There's been an imbalance in favor of the environment," he said. "The national parks are a major tourist attraction, and parks policy is tourism policy. . . . Too often, parks policy proceeds toward the ends of conservation and the environment."

McMillan is now Canada's Minister of the Environment. Strangely, he has

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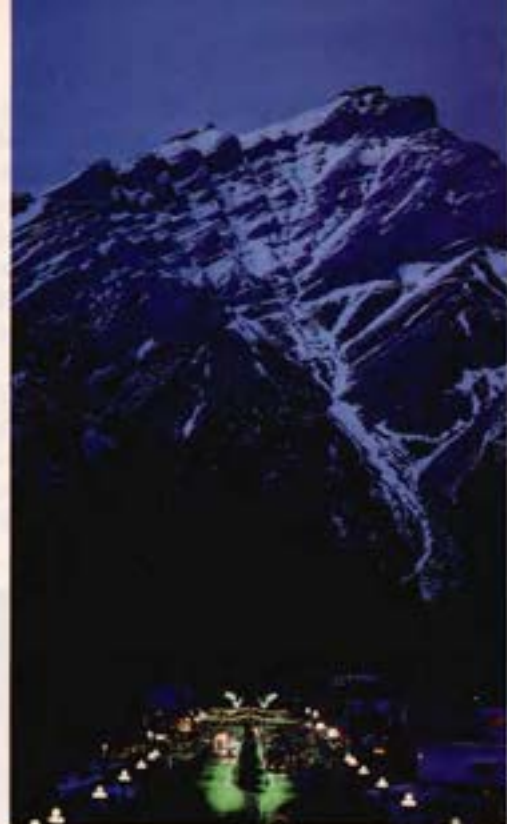


changed his tune, leaving conservation groups more optimistic than they were under his predecessor, Suzanne Blais-Grenier. In a surprise move, McMillan reversed Blais-Grenier's decision to privatize some Banff hot springs. He also ruled against the use of snowmobiles, and has said that resource protection and management should take precedence over resource use in the four mountain parks.

Even Parks Canada's plan has changed, although the agency is proceeding with "restrained development" in the four parks. No new commercial accommodations will be built in the backcountry, but existing ones will be allowed to expand within their current boundaries—a plan that conservationists consider disastrous.

It's true that the government has promised to monitor wildlife and natural resources within the parks to make sure they aren't hurt by development. The catch is that there is no money to conduct these studies. "People will have to speak to the Prime Minister about getting the money to look after the parks," McMillan says.

According to Parks for Tomorrow, part of the problem is that many Canadians assume that the government is looking after things. The conservation lobby here is small. Pachal estimates that there are only 50 people working full-time to protect the nation's 4 million



Banff's bright lights, big wilderness: Is this any way to run a world-renowned national park?

square miles. Traditionally, the government looks on public-interest groups with suspicion.

In short, more of the grassroots vigilance that Harkin felt was so necessary to preserve Canada's national parks is badly needed today. "We're always being told that we have to compromise," says conservationist McNamee. "But every time we compromise, the wilderness loses."

JERRY KOBALENKO is a staff writer for Outdoor Canada in Don Mills, Ontario.

### TOXICS

## Banned But Not Forgotten

In a toxic version of "The Cat Came Back," a carcinogenic pesticide keeps showing up in the nation's food supplies.

#### Anne Milner

**T**WENTY-FIVE YEARS ago, Rachel Carson's *Silent Spring* warned of the health risks associated with a class of organic pesticides known as chlorinated hydrocarbons. The book was instrumental in the federal government's decision to ban the most toxic of these insecticides, DDT, in 1972. Yet

traces of that chemical, which is persistent in the environment, are still found throughout the food chain, including in human breast milk.

Heptachlor, a close cousin of DDT, was banned six years later (except for use on grain seeds and pineapples and for termite control). It, too, continues to contaminate food supplies, most re-

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cently milk produced in Arkansas and sold in neighboring states.

Sadly, Arkansas is not the only state to experience problems with heptachlor. In March 1982, officials from the Hawaii Department of Health were forced to recall dairy products on the island of Oahu following the discovery of high levels of the pesticide in milk. Dairy farmers had been feeding their herds chopped-up pineapple leaves laced with heptachlor for at least a year before officials stumbled onto the contamination during routine tests. Earlier, in 1980, more than seven tons of heptachlor-tainted pork were consumed through school lunch programs in Louisiana and Arkansas when Agriculture Department officials failed to analyze test results soon enough.

Arkansas' most recent contamination, which resulted in the quarantine of more than a hundred dairy farms, occurred this spring when farmers fed their cows heptachlor-tainted mash, a by-product of a local gasohol plant's distillation process. The plant had purchased hundreds of tons of the pesticide-treated grain seed in 1980; although its spotty records indicate that it had been selling the contaminated feed only since January 1986, farmers recall that it was selling the mash as far back as 1983.

All three incidents raise serious questions about the efficacy of rules governing pesticide use and the way in which they are enforced. The EPA started proceedings to ban heptachlor in 1974, after animal studies indicated that the chemical was carcinogenic. Data from human monitoring studies found that more than nine in ten Americans had heptachlor-epoxide residues in their bodies. (This metabolized form is said to be four times as toxic as the pesticide.) Studies also showed that breast milk contained high levels of heptachlor epoxide, and that the chemical could pass through the placenta to unborn children.

In 1978 the EPA began a phasing-out process for all agricultural uses of heptachlor. This was to have been completed by July 1983, but the EPA is still allowing farmers and wholesalers to exhaust their existing supplies. Velsicol Chemical, the sole manufacturer of heptachlor in the United States, continues to produce the pesticide for export to



Michael Wolfe/The New York Times

*His heptachlor-tainted milk banned, Roger Dunn watches as his future drains away.*

countries where it is unregulated, and for termite control.

If the banned chemical isn't really banned, perhaps the next question is what a safe level of exposure would be. Predictably, there is little agreement here. The Food and Drug Administration (FDA) "action level" for heptachlor in milk—the concentration at which the agency must take steps to protect public health—is 100 parts per billion for everyone except infants less than seven months old. In 1982, Oahu milk contained upwards of 1,300 ppb; in Arkansas, some milk contained 12 times the FDA action level.

When heptachlor was originally registered with the FDA, it was defined as a zero-tolerance substance, meaning no safe tolerance had yet been established. The EPA's product manager for heptachlor, George LaRocca, says the zero-tolerance definition came about because the FDA lacked the sophisticated technology required to detect minute levels of chemicals in the 1950s and '60s.

Hawaii health activist Hazel Cunningham has filed a lawsuit against the state department of health in an effort to enforce the original zero-tolerance definition. (Her lawsuit is one of 14 brought against the state and the pineapple and dairy industries.) Cunningham says that selling heptachlor-tainted milk is illegal because no level of the chemical is safe. She charges that officials knew hep-

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tachlor was in the milk in 1980, yet "stonewalled" all consumer information, presumably for economic reasons.

Arkansas state officials took a commendably different approach in dealing with their milk scare. As soon as the FDA discovered the problem, Deputy Director of Health Stuart Fitzhugh reports, "We went on TV and radio and told people to stop drinking milk, asked mothers not to give milk to children under a year, and advised nursing mothers to stop ingesting milk." He also says the state set up a fund to test the breast

milk of women whose insurance companies would not cover the cost.

Arkansas Department of Health epidemiologist Jim Wohleb says further studies are in the offing. A tri-state study involving Arkansas, Wisconsin, and Florida will test 50 samples of breast milk from each state in an attempt to get comparative data on toxic residues in milk outside Arkansas. In addition, the department of health and the University of Arkansas are considering setting up a registry of exposed people for follow-up studies.

Health studies or no, if major contaminations have already been documented, how many undocumented contaminations have occurred? If existing supplies of heptachlor are still being depleted, how many more contaminations will go unnoticed?

According to the EPA's LaRocca, the agency doesn't know how much of the heptachlor sold before the ban is still being stored, but it is trying to find out. The agency is also trying to learn how much treated seed is still awaiting distribution by wholesalers. As to whether the EPA would take steps to dispose of any quantities that might be found, LaRocca says, "It's too early to tell."

Charles Frommer, Velsicol's vice-president for regulatory affairs, says the amount of heptachlor still manufactured in the United States for termite control is "confidential business." However, during hearings in 1976 on the proposed ban of heptachlor and chlordane (a related chlorinated hydrocarbon), the EPA estimated that more than 38 million pounds of both chemicals would be released into the environment during the 18-month period required to settle litigation opposing the regulation. The quantity of these substances released between 1978 and the final phase-out in 1983 is unknown.

LaRocca admits that it is difficult for the EPA to regulate misuse. "If someone takes heptachlor for termite control and misuses it for one of the cancelled agricultural uses," he says, "it could make its way into the food chain. Although the labels clearly state specifics as to allowable use and what constitutes misuse, there's no way to stop something you don't know is happening."

Meanwhile, health activist Cunningham wonders how long it will take the nation to realize that this is no small matter. "Thirty thousand babies were born on Oahu in 1981 and 1982," she says. "The needs of these children are not being addressed, and it drives me wild. I have reports that these kids are already having problems fighting off common colds. We need to know what the long-term health effects will be for this population, and prepare for them."

ANNE MILNER is a freelance writer and editor living in San Francisco.

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California and Monterey County have agreed on a tough new coastal plan, and Congress may strengthen it. Will regulations be enough to save this land of rock and hawk?

## Is Big Sur Really Safe?

Jeffery Kahn

**I**N THIS ERA of fiscal limits, America talks of social safety nets—a web of government programs designed to provide the country's have-nots with life's essentials. The same budget crunch has forced the nation to consider minimum-cost strategies to protect the environment. Unwilling or unable to purchase prized landscapes, government is turning toward a variety of other options designed to protect lands from inappropriate development. Zoning, easements, regulations, agreements, and (if all else fails) emergency funds to buy select sites make up the meshwork of these environmental safety nets.

But historically, developers have been as adept at finding regulatory loopholes as rivers are at finding the sea. Confronted with the relentless economic forces behind development, can government's environmental safety nets succeed, or are they too full of holes to be entrusted with the jobs given them? Will piecemeal development weigh on them until they collapse? California's spectacular Big Sur coast is a case study of these questions.

On April 9, the California Coastal Commission approved a coastal zone management program for Monterey County that is considered the most restrictive in the nation. Creating a "critical viewshed" along coastal Highway 1 (the only north-south road through Big Sur), the plan prohibits any construction that would be visible from the road, limits construction on steeply sloping land, and imposes more restrictive population-density controls. Federal legislation has also been proposed. This bill would establish the Big Sur National

Forest Scenic Area, restrict timbering and energy development on federal land, and back up the local plan's restrictions on private development to prevent future local officials from emasculating it.

A peculiar kind of synergy has worked to shape the two plans. Local governments are notoriously weak-willed when it comes to setting limits on growth, a reality that has provided the political impetus for the federal government's plan. At the same time, the threat of federal intervention has given Californians an incentive to make the local plan work.

Until Highway 1 was built in 1937, Big Sur was relatively impervious to human activity. A mountainous coastal fortress, the region intimidated would-be settlers and visitors. A battered wall of 500-foot cliffs lined the sea's edge. Inland the terrain was too rocky to till, too steep to build on, and too remote for human habitation.

When the first white settlers arrived at Big Sur 117 years ago, the greatest threat to their well-being was grizzly bears. Intolerant of newcomers, the grizzlies treated the Michael Pfeiffer family as undesirables. But Pfeiffer's son came to understand the bears' perspective. His greatest complaint was that other undesirables—ranchers, hunters, fishermen, and visitors—had moved in and made the Pfeiffer home a gathering place. Isolation had vanished, and with it the grizzlies, now extinct in California.

Robinson Jeffers discovered Big Sur in 1914. The poet described the mountainous, coastal redwood terrain as "that jagged country which nothing but a falling meteor will ever plow. . . [W]ild as the back of a grizzly bear." Land such as



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this ought to be safe from prospectors and profiteers, he wrote. In 1919 he homesteaded in a spot from which only one other house was visible, in what later became the city of Carmel. Jeffers paid \$200 for his lot; these days, the bidding on a lot one quarter that size would start at \$200,000.

Today Big Sur is the bustling domain of 1,300 residents and 3 million tourists a year. Almost all of its coastline lies within Monterey County, which has long been protective of the area. Shortly after construction of Highway 1, the county sued to keep the route from being blemished by a service station sign. It won the landmark case, securing local government's right to use its regulatory power for aesthetic purposes. So far, county officials have stood their ground, implementing zoning rules to protect the area.

Big Sur has grown by only 300 residents since the turn of the century. Author Henry Miller, who lived there from 1944 to 1960, has noted that the area attracts settlers who repel other would-be settlers as well as they can. "Something about the land makes one long to keep it intact—and strictly for oneself," he wrote in the first guidebook to the region.

Big Sur's residents are an independent lot, espousing a broad range of opinions on how best to preserve the area. The most vocal faction, which would like to keep out not only the public but especially the federal government, becomes apoplectic at the thought of federal control of Big Sur, which it fears would lead to confiscation of property. But this group feels only slightly less hostile toward the county and the California Coastal Commission.

The commission was created in 1972 when voters passed Proposition 20, a "Save the Coast" measure, over the objections of then-Governor Ronald Reagan. The voters' mandate was straightforward: Scenic areas would remain scenic, construction would be limited, and public access to the coast would be provided. In charge of the flagship of the nation's coastal zone management

programs, the California Coastal Commission oversees the plans made by local governments along the state's 1,100-mile coastline, rejecting those that do not conform to state standards.

Several hundred bills backed by development interests have been introduced in the state legislature to kill or cripple the commission. Republican Governor George Deukmejian has called for its abolition. Unable to accomplish that, he has tried to nickel-and-dime the agency to death, cutting its budget and staff by a third over the last four years.

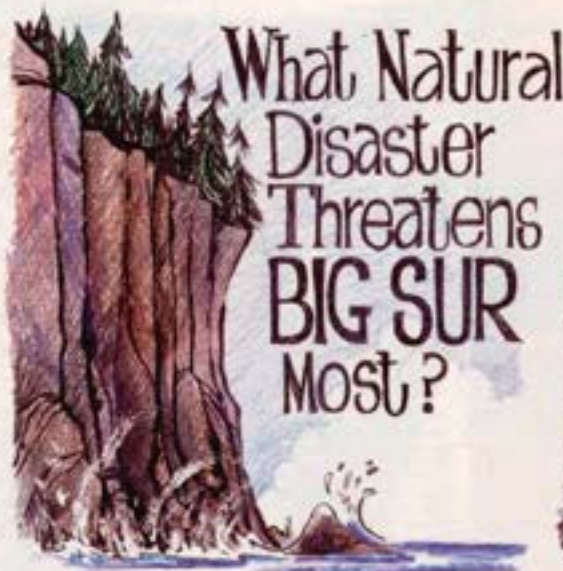
"Deukmejian has steadily appointed commissioners who are prodevelopment and who oppose the purposes of the commission," says Richard Dalsemer, chair of the Sierra Club's Ventana Chapter. "The members who represent the original thinking of the coastal act are now in the minority."

After a dozen years of wrangling among the commission, the county, and the public, the county's Big Sur coastal management plan was finally adopted by the commission in April. The enduring majesty of Big Sur now depends upon this most fragile of structures—which must serve as the rock-firm, unyielding guide for future development—and upon enforcement, which will depend on a succession of officials blown in by whatever political winds prevail at the time.

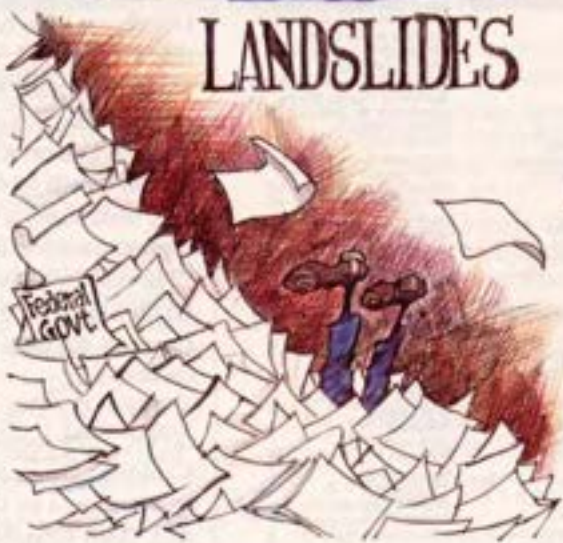
"All development must harmonize with and be subordinate to the wild and natural character of the land," according to the Monterey County/Coastal Commission Big Sur Coast Land Use Plan. "Any new development should remain within the small-scale, traditional, and

U.S. Forest Service's 75,000 acres (in Los Padres National Forest and the Ventana Wilderness), stand beside a neighboring mosaic of 1,100 privately owned parcels totaling 55,000 acres. To date, 700 of these parcels are undeveloped.

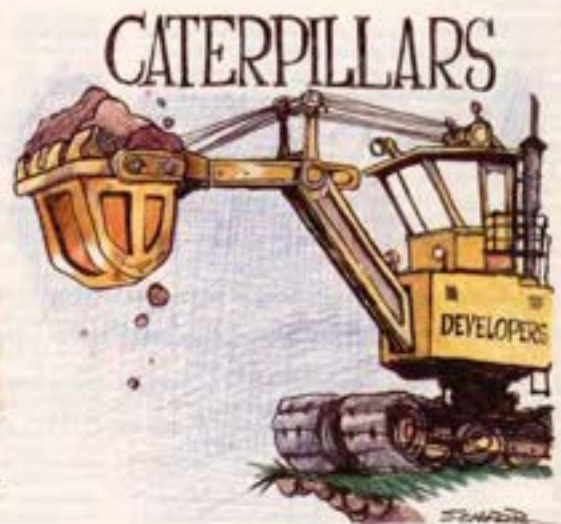
Some of the owners of this undevel-



What Natural Disaster Threatens BIG SUR Most?



LANDSLIDES



CATERPILLARS

Drawn for Sierra by Bill Schorr

rural values of the area." Accordingly, a maximum of 850 new houses could be constructed to join about 600 existing homes. Small-scale inns could also be constructed, adding no more than 300 new rooms to the current 165 units.

Even though much of Big Sur's acreage is in public ownership, the area's growth potential is still great. Six state parks totaling 12,000 acres, plus the

opened land stand ready to attack the chief provision of the land-use plan, which states: "The county's basic philosophy is to prohibit all future public or private development visible from Highway 1." The plan permits construction within the critical viewshed if a landowner has a copse of trees or a hollow to hide the proposed dreamhouse. Otherwise, landowners may receive two "transfer

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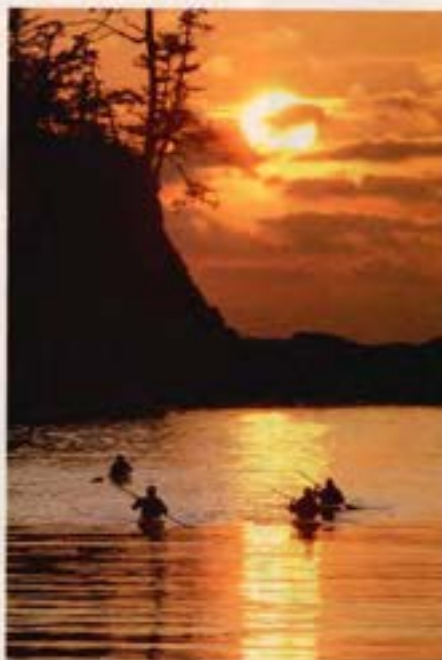
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of development credits" (TDCs), which theoretically guarantee the right to build two homes outside the viewshed. But it's up to the landowner to find a home-site or a buyer for these rights.

Landowners say that's highway robbery. At hearings, their attorneys cite the Fifth Amendment provision that says no private property may be taken for public use without compensation. Several landowners have threatened to sue, claiming that private land is being confiscated by the plan.

The state, on the other hand, claims it has the nation's most workable TDC program. It has acquired more than a hundred lots outside the viewshed, and says it is willing to buy TDC credits. But these lots alone cannot satisfy all affected landowners.

Big Sur resident Richard Clements, Jr., is infuriated by the web of regulations being thrown over his community. "A constitutional lawyer should go to court over it," he says. "The transfer of development credits is Mickey Mouse. I think you'd be better off with a lottery ticket."

Karin Strasser Kauffman, who represents the Big Sur coast on the Monterey County Board of Supervisors, says the county needs to buy about 50 TDCs. "We need a major sum to assure that the owners receive fair value," she says. "The county doesn't have the money to do this. We would like to see nationwide support to help us compensate the owners."

Enter the Big Sur National Forest Scenic Area legislation, introduced by California Senator Pete Wilson (R) and co-sponsored by California's senior senator, Alan Cranston (D). This bill embraces the local plan as the basic guideline for protection of the region's private lands. But the most controversial provision gives the federal government the authority to condemn private land if residents approve a variance of or amend the local plan. In this case, the Secretary of Agriculture would be authorized to purchase any land targeted for inappropriate development.

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coastal areas inevitably grow, the careful [state] plan deserves more than our thanks," Wilson said. "It must be honored in its observance rather than in its breach."

Scenic area status has been conferred by Congress only once before, on California's Mono Lake. If the Big Sur National Forest Scenic Area is created, the Forest Service's 75,000 acres would be withdrawn from commercial timber harvest as well as from oil, gas, hydroelectric, and geothermal development. New mining claims would be prohibited, as would oil and gas development on the outer continental shelf 20 miles out to sea.

The federal legislation also attempts to overcome one of the plan's biggest problems—a lack of funds to buy land from owners who cannot build within the critical viewshed and who are threatening to sue. Rather than attempt to tap the beleaguered federal treasury, now off limits for such purposes, the bill creates a private fundraising board (patterned after the Statue of Liberty–Ellis Island Foundation) that would launch a national campaign to raise money for land acquisition.

Many local landowners are enraged by the Wilson scenic area bill, likening it to a federal invasion. Typical is the angry reaction of Clements. "We are damn sick of having our homes threatened time after time," he says. "I don't want to live on an Indian reservation. I'll burn my home down before some forest ranger lives in it."

Monterey County Supervisor Kauffman opposes the Wilson bill because it "contradicts and overrules" the local plan. She says the bill would wrest management authority from the county and create a fundraising and land-acquisition body that would eclipse the efforts of the locally based Big Sur Land Trust. Worst of all, she says, it would give the federal government power to take private land.

Nancy Hopkins, a trustee of the Big Sur Land Trust who has lived in the area for 38 years, is less wary. "I would welcome federal help if it is needed to pre-



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vent developers from taking over," she says. "But we haven't really tested the local plan yet."

Other residents say they share the goal of preserving Big Sur but fear the federal proposal would attract more tourists, turning Highway 1 into a crowded asphalt roller-coaster ride. Already, they say, sightseers jam the road in summer. Look at Yosemite Valley, they argue.

The late Ansel Adams, a resident of Carmel Highlands just north of Big Sur, knew Yosemite well but didn't buy these objections. Dean of America's landscape photographers and a long-time Sierra Club director, Adams didn't believe a local plan could stand by itself. In 1977 he proposed that Big Sur be made a national scenic area. Senator Cranston responded by introducing legislation in a tougher form than this year's bill. In 1980 and again in 1981, Adams' hopes were dashed when Congress failed to enact protective legislation. Those willing to rely on local protection, he said, are "dangerously naive."

Is the elegant environmental safety net woven by Californians around Big Sur enough? Even if reinforced by the federal government, can it endure? Michael L. Fischer, who resigned in 1985 after a seven-year term as executive director of the California Coastal Commission, says the state program is an experiment. Whether the coast can be protected without public purchases is doubtful, he says.

"In theory, the area of the commission's jurisdiction is large enough, its history long enough, and its authority clear enough to protect coastal resources effectively," he reasons. "Has the California coast been saved? I believe not. Has the state established a process that will protect the long-term, larger-than-local interest in the coastal zone? Possibly, but probably not. Much more time will be needed to answer the question fully."

But waiting, he notes ruefully, is a developer's game. ■

JEFFERY KAHN is a San Francisco-based environmental writer.



PHOTOGRAPH: © MORLEY BAER

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## Joan Hamilton

**W**E'RE IN THE COASTAL MOUNTAINS of Northern California, heading up a drainage we know only from studying maps. Massive conifers sift light down to maples, oaks, ferns, and azaleas. Ripe elderberries and raspberries line the trail. I walk along a path cushioned by a thick layer of leaves and pine needles, grateful that our long-awaited week in the wilderness has begun.

"I need my bottle!" barks two-year-old Patrick, riding high atop his father's pack. Though rudely put, this request is easy to fill. I slip a bottle of milk out of my pocket and plunk it in his lap without missing a step.

More difficult problems lie ahead, however. Six-year-old Katie is carrying a pack for the first time, and though it only weighs a few pounds, she drags her feet through the leaves on the trail, muttering and sniffing. "I'm tired," she moans after 15 minutes. "When can we stop?"

Our patience and sense of humor sag under the weight of packs filled with Patrick and a family's worth of gear. We desperately want to show Katie the fun of hiking. We also want her to feel that this is something *she* wants to do, not just her folks' peculiar passion. But how? Putting a pack on your back and walking long distances just doesn't make sense to a kid—especially if her parents seem to do it with quasi-religious fervor.

It could be our enthusiasm that worries her. "Just how far are they going to try to make me go this time," I imagine her thinking as she kicks at the trail, "and how am I going to stop them?"

This is the first year we've had to think about these issues. When Katie grew too big to be carried, ripe berries, stories, trail hide-and-seek, and silly songs seemed to provide the momentum. But I sense that we're on the brink of a new stage here—that we're walking with a six-year-old force beyond our control.

**K**ATIE WAS FOUR MONTHS OLD when she set off on her first camping trip, a winter overnight in Wyoming's Absaroka Range. The trip seemed daring and complicated enough at the time, but it was easier in some respects than those that followed. Katie was light, sedentary, and easy to entertain. She dined exclusively on breast milk. She was mesmerized by the slow cruise to camp in a Finnish sled pulled by her dad, Bruce. When the sled turned over on a steep slope, we panicked, but Katie slept. It was just another amazing day of infancy to her, no more or less strange than her first ride through the supermarket.

Come springtime, we were backpacking—and sewing and tinkering to meet our family's new recreational needs. An infant-size rainsuit and mosquito hat came first, followed by a

*Patrick, Katie, Grandpa, and Mom stroll through a rain shower in the Trinity Alps. Their 22-mile excursion tested the adults' patience and left the children longing for motels. But they all want to go back.*

# CAMPING with KIDS



Bruce Hamilton

billowy pack cover fashioned from mosquito netting.

The pack itself went through several stages of evolution. At first we strapped a Gerry child carrier to a Kelty frame. An umbrella lashed to the top of the assembly provided shade and a way to envelop both child and hiker in mosquito netting when necessary. It was an unwieldy setup that often got tangled in overhanging branches and inverted in high winds. But Katie the Adaptable rode along in it happily enough her first summer.

The next year we decided the umbrella had to go. A bar of PVC pipe went up over the baby's seat to support a pack cover with a homemade mosquito-netting window. This structure not only

"foul food gear" saved on both laundry and the volume of clothes we needed to haul. It also helped keep Katie clean and (I hoped) unattractive to grizzlies.

Our loads were weighty and voluminous nonetheless. Adding Katie's 35 pounds plus her ten pounds of gear to our usual 40- or 50-pound packs for a week-long trip would have been awkward at best. Healthy but not herculean, we looked around for help. Sometimes friends came along. But on our longest trips we were always accompanied by my father, a retired pilot and veteran backpacker with an unusual tolerance for our children. Even our dog did her part by carrying a few useful items.

Then, around Katie's third birthday, we discovered pack goats. An eight-year-old nanny goat, Mindy, carried 30 pounds with faithful devotion over the course of two summer trips. She was as friendly and eager to please as the dog, and she fit neatly in the back of our Volkswagen hatchback for rides to the trailhead. We formed an odd but able pack string in those days: mother, child, father, grandfather, dog, and goat, united in common endeavor.

A neutered billy goat we were raising would probably have been able to carry as much as 80 pounds. But when we moved from a cabin near Lander, Wyo., to Berkeley, Calif., the goats had to go.

Katie is now an able walker, and it's her brother Patrick who's our restless, noisy baggage. Dad, now 71, still comes along to share the load and—as he puts it—to remind himself of how much easier things are at home. The kids entertain each other. Pat is almost out of diapers. Even without the goats, we are pretty well equipped to enjoy the wilderness, it would seem. But on last summer's trip, Katie decided she didn't like hiking.

**J**UST SEE IF YOU can walk for ten more minutes, Kate, okay? We've just started," I plead.

Katie nods, but a scant five minutes later she is at it again: "How much longer now?"

"Five minutes."

"I'm tired now!"

My pack feels extremely heavy. Dad is silent. Bruce tries to make Katie forget her troubles with jokes, to no avail. Finally we work out a deal. After 30 min-

utes of gripeless walking—time spent grumbling is subtracted—we will sit down for a snack and a rest. Grandpa keeps the time, and I keep the goodies.

This bit of structure (or bribery?) does wonders. Almost instantly Katie sheds her cloak of gloom. I regain my strength. The hike becomes a game. You walk for half an hour and get a lemon drop, some raisins, or a chocolate square. It takes us 45 minutes to fit in half an hour of pure walking, since we often stop for birds, bugs, and berries along the way. But Katie never lags behind. In fact, she brags about her prowess. "I'm not a bit tired," she confides at one stop. After those grim first steps, there is astonishingly little grumbling.

Our old tricks still work well with Patrick. Bruce rushes ahead with Katie. Then, often not very well hidden, they pop out from behind a tree, shouting "Ambush!" When the hiking gets harder, we sing. After "Row, Row, Row Your Boat," "The ABC Song," and "The Ants Go Marching" have had a few too many encores, we switch to stories, embroidering stock fairy tales with modern twists and appearances by Katie and Pat. When we run out of breath or ideas, a sprig of wild berries keeps the kids content for a while.

An hour or so down the trail, Pat thrusts his arm out, pointing into the forest. "Horsey!" he shrieks. "Horsey!" We peer into the woods to find a small mule deer just 20 feet away, as transfixed by us as Pat is by it. We watch quietly until the deer crosses the trail and heads downhill. The kids are quiet and big-eyed with their new knowledge: The woods are alive! Bruce and I gratefully ease up on the vaudeville routine.

Soon after lunch, we set up camp. If it takes some cajoling to get Katie down the trail, she is an exuberant camper. She loves the nest-building and the glorious, big backyard. Soon after the tent is up and the kids have tried out all the sleeping bags, Katie announces that she's taking her brother on a "nature walk." I watch from a distance as they warily circle a granite cave "where a lion might live," according to Katie. Then they put their noses up against the moss of a rotting log, stroke a large, wet mushroom, and turn over stones to see what crawls away. Soon they have discovered



Bruce helps then-three-year-old Katie keep her shoes dry. Most of the trip, she rode in the bicycle seat strapped to his pack.

got us through wind, rain, sun, and bugs, it also served as a mobile diaper-drying unit.

Then one day bustling three-year-old Katie, now 35 pounds, broke the Gerry pack. We splinted it with pine boughs to get out of the mountains. The next trip we strapped a child's bicycle seat to the Kelty frame—a setup that has served us well for several years.

Katie eventually graduated from breast milk to fresh trout, freeze-dried goulash (pulverized in a baby-food grinder), and bottles of powdered milk and lemonade. Her rain gear doubled as a full-length bib. Diligent use of this



*Katie Hamilton sits amid gear that was unavailable when she started camping way back in 1980. Her jury-rigged carrier, now passed on to brother Pat, could be replaced by specially designed models from Mountain Masters (left) and Kelty. The red backpack from Wilderness Supply Co. and Katie's external-frame pack from Wilderness Experience will adjust to fit as she grows—an important consideration with more expensive items. The clothes are from Patagonia, a pioneer in children's outdoor clothing, the boots from Hi-Tec, and the Littlefoot sleeping bag from The Northface. Eureka! supplied the tent.*



a number of sports unavailable in our urban neighborhood: jumping off logs, rolling in the pine needles, and—their favorite—throwing rocks into large pools of water. When Grandpa catches a couple of fish for dinner, they stroke them reverently, and build a fish-cooling castle with rocks in the stream.

All is well until sundown, when a great-horned owl hoots. "I don't want it to be night," Pat says, terrified, "I want to go home." We retire to the tent and tell him not-too-scary stories about his adventures with friendly lions, owls, and deer. Long after story time, he lies awake with his arm around my neck, listening. At dawn, when sunlight streams into the tent, he's a new boy. "We're camping," he says, a triumphant grin on his small, dirty face.

After dinner each night, Katie eagerly dictates stories of her adventures for the family journal:

"August 30: I was getting some rocks for Pat. But I slipped and the water was over my head. I yelled two times and thought for a second and swam. I got to the shore nice and safe."

"August 31: At the middle falls me and Joan were going to go swimming. Then we spotted a salamander in the water. It was brown with yellow spots and it had a bumpy collar around its neck."

*A string of drying diapers forms a backdrop to this toddler camp. Twelve cloth diapers and twelve disposables kept Katie well supplied for a week that included two days of rain.*

"September 1: We saw a bear poop. It was three feet long maybe. And it had lots of manzanita berries in it."

Our pattern is pretty well set: Half a day of hiking, then half a day of explorations, fishing, swimming, and camp chores. Katie is now sunburned and sassy—and clearly enjoying herself. Pat's fervent "I want to go home" has mellowed to the calm query, "Where is our home?"

**W**HEN I LOOK BACK ON this trip, I remember that we adults worked extremely hard. I recall wondering a few times—usually when the kids were unhappy about something—if backpacking wasn't just an inappropriate habit I'd neglected to break at the onset of motherhood.

But the trip has become a popular part of our family history. Katie brags to her friends about it, and proudly told an adult visitor, "We go to the wilderness every year." Bruce plans the next excursion as we ride home from the last, and I'm ready to try again too. It's work, but it's also a relief from the interruptions, obligations, and distractions that keep kids and parents apart in civilized places. Margaret Murie spent entire summers in the mountains with her children and her field-biologist husband, Olaus. Her

comments in *Wapiti Wilderness* about managing children in the backcountry seem particularly apt: "Well, all I can say is that it was simpler there than in town. . . . I had no hardwood floors to wax and polish; no furniture to dust, no telephone to answer, no parties or committee meetings to attend. . . ."

During our week's trip last summer we covered about 22 miles—a distance easily trod in a weekend by the kind of hiker I used to be. But I didn't feel cheated by the limitations of our awkward party: I felt exhilarated. The kids were learning to like my favorite kinds of places. They, in turn, were teaching me to slow down and turn over some stones myself.

**A**SWEET SADNESS sweeps over me as we approach the trailhead, as often happens after a good trip. But my reverie is cut short as soon as Katie catches sight of the parking lot.

"There's the outhouse, Mom. . . . There's the sign. . . . There's the cars! We're home!"

It is Labor Day weekend. There are at least two dozen more cars in the lot than when we left. Some of them have people in them, with radios blaring.

"Aren't you glad, Mom?" Katie asks.

"Not really," I say. "It was a wonderful trip."

"It was a *stupid* trip," Katie says. "No garbage cans, no picnic tables, no bathrooms. When I get home I'm going to stay indoors for a long time."

I have no rejoinder. Preaching wilderness appreciation to Katie is futile; I know from experience. She's young, she's stubborn, and she loves to play devil's advocate with her folks. She's determinedly on the way to discovering hiking, camping, and snooping around the woods for herself.

It starts to rain. "Get me out of here!" Pat yells. Hurriedly, the retreat to civilization begins. We strap the packs atop the car, tug off our boots, and find a bottle and fresh diaper for Pat. The kids climb into the car, chanting "We want a motel, we want a motel!"

Obediently, we drive down the hill to a hot meal and some real beds. ■

JOAN HAMILTON is an associate editor of *Sierra*.



## CAMPING AT ALEXANDER FLATS: A FAMILY'S TRADITION

Jack Trueblood

**M**Y FATHER was a writer and wilderness advocate, and although he worked hard to protect wild areas in Idaho, we never packed into a designated wilderness as a family. Yet somehow he managed to instill in me the ambition to fight for the preservation of these great natural areas. He did it by example while we camped from the family car.

My parents were convinced that the outdoors was the healthiest place to bring up kids. Fortunately, they were aware that the most effective way to teach us to be at home in the wild was to let us enjoy it in our own way.

We camped in places throughout Idaho, a favorite being Copper Basin. Turning from the main gravel road, we soon crossed the North Fork of the Big Lost River. Just past the river we would pass an abandoned corral, turn downstream along a dry bench, and weave among lodgepole pines to where a creek flowed into the river. Camping on this little bench above the river protected us from heavy dew; it also meant we could drive across firm, dry ground and not leave tire tracks along the water.

Family tradition was also established near Alexander Flats on the Middle Fork of the Boise River, where my father first camped in 1935. Since then, hardly a year has gone by that a family member has not camped there. We have seen a big ponderosa pine grow old and die; trees that were small when I was young have grown up to shelter our camp. Otherwise the place is unchanged.

I found great satisfaction in coming back to Alexander Flats with my children when they were small. I would walk up ridges with them and point out landmarks with family names. Knowing that my kids were seeing almost the same thing I saw as a child was the rich reward for years of maintaining our own camp.

In choosing a campsite when our kids were young, we thought about safety for them (and peace of mind for us) and avoided big, swift rivers. Because we wanted to turn them loose as much as possible, we picked streams they could play in safely and camps with definite drainage in fairly open woods. That way, if they hiked up the creek they could easily find their way back.

Our stream often represented a boundary between kid camp and adult camp. Just as I had done as a child, my two set up their own tent and built their own fire. One of their camps was against a low rimrock about a hundred yards from us, across a stream that barely trickled over gravel

stretches between big pools. They tied a canvas to the rock to shelter their sleeping bags and made a tiny campfire from small twigs and branches. We were invited over to dine on beanie-weenies and foil-baked potatoes. The only rule they had to follow in their camp was that no one should be able to tell they'd been there.

As family car-campers we made good use of travel corridors, which the Forest Service defines as "a linear strip of land identified for present or future travel right-of-way." These vary in width, but they usually offer a variety of camping spots along the borders of roadless areas, both in developed campgrounds and more isolated spots.

Though plans for new roads in most national forests are



The Trueblood family camp, 1958. From left are Dan, Ellen, Jack, Ted, and Rip.

a valid cause for concern, many of those that exist allow access to trailheads and give people who car-camp a choice of places to go. The corridors along wilderness areas offer dayhikes and adventures in the wild while retaining the comforts of a base camp, providing a valuable service for people who have small children.

For parents who love the outdoors, the real test comes when our children are grown. Last fall I got a call from my son, now a sailor stationed near San Francisco. He had met a fellow sailor from New York, and whenever possible they drive to the mountains, where John enjoys teaching his friend about camping and fishing. He told me how beautiful he finds the mountains, and how each visit makes him long for the familiar places in Idaho that he loves. With all the things there are for a young serviceman to do in a big city, I was relieved to hear how he chose to spend his time. But I wasn't really surprised, because I know how he was raised.

JACK TRUEBLOOD writes about the outdoors from his home in Nampa, Idaho. He contributed "Wide Open Wilderness" to the September/October 1985 Sierra.

# Spiritual Sauntering

*For John Muir, mountaineering was not so much a sport as a way of being, of making contact with the infinite.*

**O**N THE RIM OF YOSEMITE, with his toes hanging out over a 3,000-foot drop, John Muir couldn't help "fearing a little that the rock might split off." Overwhelmed by his first view of the valley from above, he backed away and ran shouting and waving his arms, scaring a bear in his frenzy.

It was a glimpse of the falls that he really sought. He followed Yosemite Creek down to the point where the water plunged into the abyss with a deafening roar. He then took off his boots and crept along the rushing water. Unable to peer over, he searched for some natural flaw in the smooth granite, hoping to climb out still further to gain a better view.

"Scanning it keenly," he wrote later, "I discovered a narrow shelf about three inches wide on the very brink, just wide enough for a rest for one's heels." Recognizing a nearby plant as one quite caustic to the taste, he filled his mouth with the leaves, "hoping they might help prevent giddiness." His mind thus distracted from fear and thoughts of self-preservation, Muir slipped his heels down onto the narrow shelf and moved out slowly to gain a perfect view of the frothy water on its 1,400-foot descent. Enchanted and transfixed, he let his mind drift, trusting his body to do what was needed.

In addition to his achievements as a man of science, wilderness philosopher, and conservation pioneer, John Muir had another, less publicized but equally distinguished accomplishment: In the last quarter of the 19th century, he was among the best mountaineers in the United States—perhaps the greatest of them all.

A climber of legendary endurance, Muir moved with unparalleled finesse on vertical rock and ice. He had a string of mountain summits

to his credit equalled by no other person of his era. Yet pre-eminence as a climber is accorded him not so much for his physical prowess as for his personal philosophy: a perspective on nature that he brought to the sport of climbing.

In the summer of 1869, Muir began a period of active mountaineering that would span more than 25 years. With meager provisions—usually just bread and tea, occasionally oatmeal, and a couple of blankets—he scaled peak after peak, most often alone. "Come higher," the

mountain voices said to him; "Many still voices are calling, 'Come higher.'"

Raised on demanding farm work and an ethic of puritanical frugality, Muir came to the mountains armed with a determined will and leathery constitution. Refusing to care for himself in the conventional ways, he enjoyed his life of privation: "Just bread and water and delightful toil is all I need." He attributed his physical drive to "Scottish pluck and perseverance," which allowed him to endure hardship, sleep outdoors in

*Arthur W. Ewart*

*Color Photography by Galen Rowell*



*In 1908, his days as an active mountaineer behind him, John Muir surveyed his beloved Yosemite Valley from an overhang at Glacier Point.*

his shirtsleeves, and go days without food in arduous situations that would break all but the most rugged souls.

The 1870s were Muir's most intensive period of mountaineering, when he roamed through the Sierra Nevada from Mt. Whitney to Mt. Shasta. His climbing style emerged in this early period, characterized by reliance on the lightest of supplies (no rope, for example) and an unbridled enthusiasm for adventure. Unabashed, he would talk aloud as he climbed, whisper to flowers, or yell and gesticulate when

he saw something particularly moving. He climbed to deepen his already profound affection for everything wild. "Who wouldn't be a mountaineer?" he once asked. "Up here all the world's prizes seem nothing."

Muir spent the early 1870s living, working, and roaming in Yosemite Valley. After he left his work as a sawyer and carpenter in 1871, he was free to "saunter" through the mountains, pursuing his glacial studies.

In 1873, an especially productive climbing year, he explored the Minarets, the

beautiful sub-range of peaks south of Yosemite, and climbed Mt. Whitney, then the highest peak in the United States. After the Whitney climb he wrote to a friend, "I saw no mountains in all this region that appeared at all inaccessible to a mountaineer. Give me a summer and a bunch of matches and a sack of meal and I will climb every one." Muir was captivated by the tonic of adventure on high peaks. Now in his mid-30s, he was ready to state with certainty: "I am hopelessly and forever a mountaineer."

He came down from the mountains, reluctantly, only at the behest of friends who implored him to share his knowledge. In 1873 he set up temporary residence in Oakland, Calif., and spent ten months writing. This was his first extended period of confinement in six years, and he barely tolerated it. He finally returned to Yosemite Valley in 1874, declaring, "I'm wild once more." In November he reached the top of massive, glacier-flanked Mt. Shasta for the first time, then sat out a four-day storm on the side of the mountain. Given up for lost by local residents, he recalled afterward, "They thought that poor, crazy mountain climber must be frozen solid and lost below the drifts."

In April 1875, Muir was once again on Shasta. He and his companion Jerome Fay were still on the summit completing a geodetic survey when a storm "began to declare itself." They were soon engulfed in high winds and severe hail. Unalarmed, Muir took time to examine the hail's symmetry: "Six-sided pyramids with rounded base, rich and sumptuous-looking, and fashioned with loving care." As the sky darkened, his thermometer registered below zero.

Muir was determined to make his way down, but Fay would not hear of it. Just a hundred feet below the summit, within the old volcanic core, was a hot, bubbling fumarole pit where mud and steaming gases created a stark contrast to the ice surrounding the hollow. This

was where they decided to stop. Two feet of snow fell in the first few hours of night. Their backs were scalded by the hot mud as snow drifted over them, "augmenting our novel misery," as Muir put it. When the storm cleared, the temperature dropped even lower, and the two climbers talked through the night to keep from falling asleep.

Daybreak finally came, and though it was still bitterly cold, the two men had to descend. Both had frozen feet and one of Muir's arms was numb, but they called upon "a kind of second life, available only in emergencies." Stumbling down the mountainside, they finally felt the warmth of the sun, which renewed their will. A friend, Justin Sisson, came looking for them with horses and provisions—the only time Muir was ever rescued in the mountains.

During most of the 1880s, the responsibilities of family and fruit ranch kept Muir at home in Martinez, then a small farming community near San Francisco. But in 1888, at age 50, he went back to the mountains for good. Muir and a group of friends made the seventh recorded ascent of Mt. Rainier. "I did not mean to climb it," he wrote, "but got excited and soon was on top."

As his 60th birthday approached, Muir showed no sign of retiring. "I must have been born a mountaineer," he wrote in 1895, following a six-week trip to his old haunts in the Sierra. "I suppose old age will put an end to scrambling in rocks and ice, but I can still climb as well as ever." Even during his round-the-world tour of 1903-04, he was skilled enough to romp across the Mueller Glacier on Mt. Cook in New Zealand: "In jumping on the boulder-clad snout," he wrote, "I found my feet had not lost their cunning."

**A**LTHOUGH MUIR'S climbing grit and unprecedented number of climbs are impressive, equally unique are the ideas behind these achievements. Influenced by a background in classics, scripture, and humanism, his driving force was essentially spiritual. One of America's foremost transcendentalists, Muir was the only one to practice his philosophy on granite walls. "Religion is on all the rocks," he wrote. Inspiration brought

an added dimension to his exploits, and it is impossible to know the climber without understanding his spiritual preoccupation.

When he was in the mountains, Muir was attuned to more than their silent, stoic beauty: He felt ebullient life bursting forth from the rock and ice. This vision affected all aspects of his climbing, and elevated his mountaineering efforts from the realm of simple sport to spiritual quest.

Muir felt "Spirit" speak in every whisper of wind on the summit, in movements of shadow across rock, and in the sharp report of ice breaking away from a cliff. Nowhere was this relationship to nature more obvious than in Yosemite Valley. "No temple made with hands can compare with Yosemite," he wrote. "Every rock in its walls seems to glow with life." In each crystal he perceived a smaller but no less magnificent expression of the Spirit he felt in the entire mountain range. When he designated the Sierra Nevada the "Range of Light," he was acclaiming not its afternoon alpenglow but its inspirational qualities.

Intoxicated with the beauty of the Sierra, Muir was swept into a dynamic interplay of physical environment and spiritual revelation. "This I may say is the first time I have been at church in California," he noted after his climb of Cathedral Peak in the summer of 1869. When he first saw the peak several weeks earlier, he had hoped not to conquer it but to "climb to it to say my prayers and hear the stone sermons." (Unbeknownst to Muir, his ascent was the most difficult rock climb yet done in America.)

That religious zeal permeated his every move in the mountains should come as no surprise. The son of a harsh Calvinist, Muir grew up reading in secret any book but the Bible. He memorized the Old Testament and much of the New, and never lost his love for the Bible's beautiful prose and its examples of life's ethical proprieties. Few people lived a more spiritual life, though it was very different from the one his father had envisioned for him. Muir never accepted the somber side of fundamentalist Christianity; he rejected his father's God and embraced a more benevolent

deity, designated "Nature," "Beauty," or "Spirit" in his writings. But convincing his father that scrambling through the mountains brought him closer to God was a struggle. "You cannot warm the heart of the saint of God with your cold icy-topped mountains," his father wrote to him. "O, my dear son, come away from them to the spirit of God and His holy word."

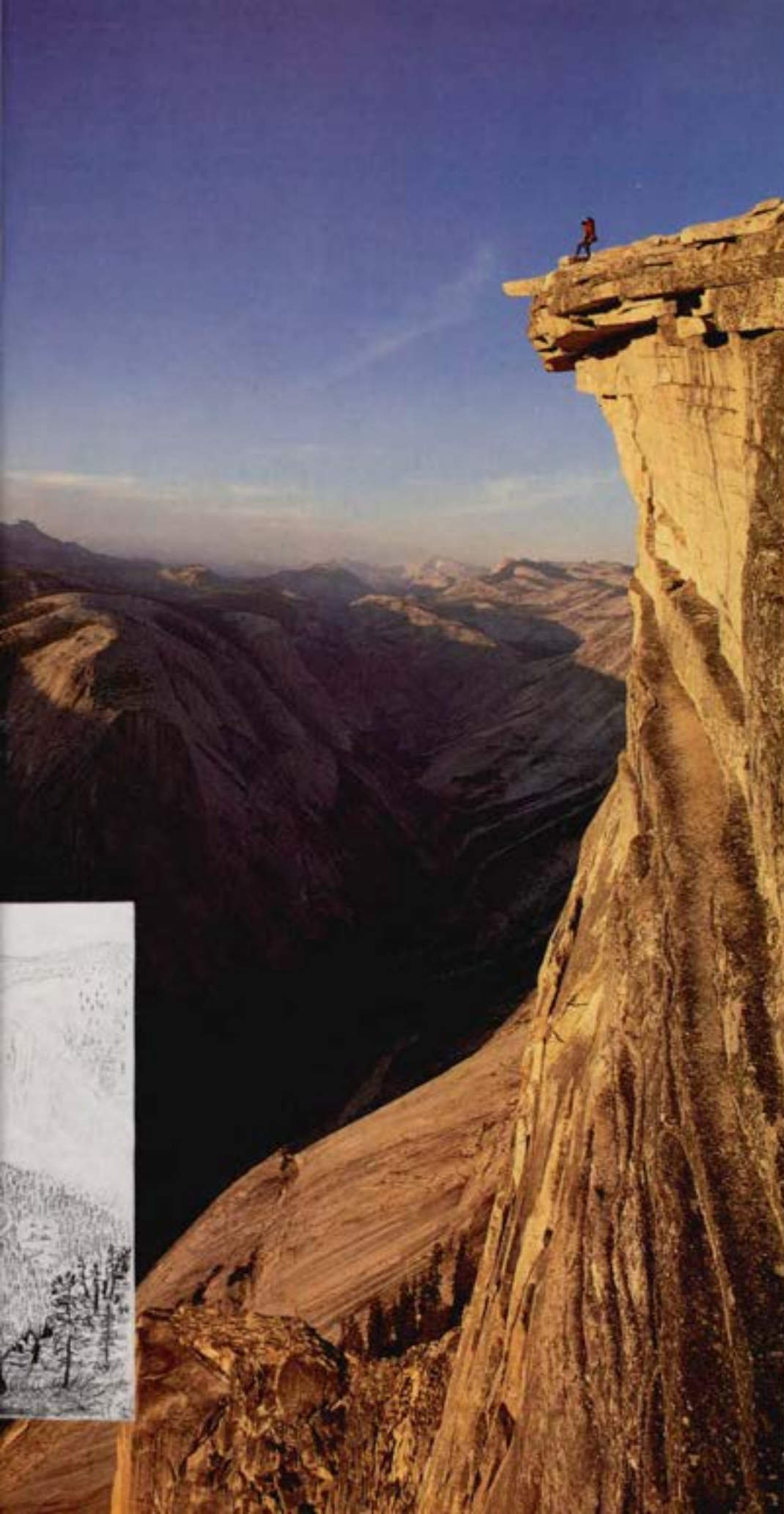
Yet the younger Muir was convinced that his particular vision did not conflict with the teachings of Christianity; that, in fact, nature and the Bible "harmonize beautifully." He later stated with confidence, "Christianity and mountainarity are streams from the same fountain."

Another quality that made Muir unique among climbers was a sharply defined "soul life," a virtual sixth sense he developed while climbing. "The life of a mountaineer seems to be particularly favorable to development of soul life," he explained. This refined intuition seemed to save him in perilous situations, and always enabled him to climb beyond the point at which others, bound by logic or reason, would stop.

Never was this "other self" more evident than on his ascent of Mt. Ritter. Just as happens to every mountaineer sooner or later, it happened to Muir: Halfway up the vertical face, unable to move up or down, he was on the verge of falling. Reason fails the climber at

*Muir made this pencil sketch of the lower Yosemite Valley around 1870. Prominent features include El Capitan and the meandering Merced River.*





*The hiker who completes the strenuous climb of Yosemite's Half Dome can savor a majestic view that takes in North Dome and Tenaya Canyon.*



*Two images of Cathedral Peak, a century apart. Below, a view from the west, above Lake Tenaya, drawn in ink by Charles D. Robinson in 1889. Above, a contemporary winter photo.*





dying in the mountains. Once, while dreaming that he had fallen from a cliff, he felt himself "rushing through the air." Startled awake, he was both shaken and ecstatic, and exclaimed, "Where could a mountaineer find a more glorious death?" Muir never wanted to die while climbing, but he accepted the possibility as the price for getting closer to Beauty.

The founder of "clean climbing" in this country, Muir was a climbing purist. He brought the virtues of intellect, determination, and spirituality to the mountains, along with a strong desire to understand divine manifestations. No armchair transcendentalist or cloistered seminarian, he went out into the world to search for God and show the way to others, intensely engaged in both his spiritual pursuit and civic responsibilities. The success of the Sierra Club is testimony to his efforts in the latter arena, and his own words leave little doubt that he

such moments; as Muir remembered it, his mind "seemed to fill with a stifling smoke." But suddenly, inexplicably, he became "possessed of a new sense. The other self . . . call it what you will—came forward and assumed control . . . and my limbs moved with a positiveness and precision with which I seemed to have nothing at all to do." The danger past, he continued on to the summit, where he remained almost until sunset, spellbound, his body reverberating with the new-found energy that acutely heightened his senses. He experienced no finer climb.

Lucky, some might say of this episode. Indeed, more than once Muir came uncomfortably close to death in the mountains, only to escape unharmed. He made mistakes (as does every mountaineer), his judgment was sometimes poor, and at times he was simply caught in reverie. Never for a moment did he forget that he was mortal, but religion removed his fear of



*The imposing massif of Mt. Ritter (top), the peak where John Muir nearly fell to his death, then found the will to save himself and continue to the summit. Above, Muir's own drawing of Ritter, circa 1873.*

achieved his spiritual quest: "When the glorious summits are gained, the weariness all vanishes in a moment as the vast landscapes of white mountains are beheld reposing in the sky, every rock with its broad flowing folds of white glowing in God's sunshine, serene and silent, devout like a human being. This is true transportation."

It is hard to imagine Muir dying in a hospital bed on Christmas Eve, 1914, rather than out among his friends, the mountains. The image of the powerful climber strikes a stark contrast with the coughing, lonely figure still intent on spreading the word, notes for his next book at hand. But Muir survives in his mountaineering legacy, for his virtues as a climber went beyond the means for scaling icy peaks and granite cliffs; they embodied guidelines for living. ■

ARTHUR W. EWART, a historian with a special interest in mountaineering, teaches a course on John Muir at Santa Rosa Junior College in Northern California.





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# A WILDERNESS FIRST-AID KIT

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*Don't leave the trailhead without it!*

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Steve Donelan

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**Y**OU'RE crossing a stream on a fallen tree trunk when your friend slips, cutting the inside of her arm on a jagged branch stub and cracking her shinbone on a rock. Do you have what you need in your first-aid kit to stop the bleeding, splint her leg, and keep her alive?

Or you're scrambling up steep granite when someone falls, knocking his companion off balance so they both come tumbling down. At the bottom you find they have many large, dirty abrasions. Are your first-aid supplies adequate to clean and protect all the damaged skin?

Wilderness injuries are multiplying as more and more people venture into the backcountry. Many of these people

give little thought to first-aid kits until they learn—the hard way—that they're not prepared to deal with wilderness accidents. First-aid courses taught by competent, certified instructors should give you some skill at improvising. But without the proper equipment you will be handicapped at best; at worst you'll find yourself unable to treat injuries or prevent complications.

From the first-aid's standpoint, injuries are of three types: those that will kill the victim unless something is done immediately; those that cause serious damage and may kill or disable the victim in time; and minor injuries that normally cause only temporary discomfort. Remember, though, that in the backcountry even minor injuries (such as blisters) can cause serious complications. And infections—like the climbers' dirty abrasions—are much more of a hazard when one is far from help, because they have more time to develop.

## *Wounds, Dressings, and Bandages*

**A**nthing that stops a person's breathing or circulation will kill within minutes at normal body temperature. In these situations a first-aid kit may not be much help: What you need is training in cardiopulmonary resuscitation (CPR).

To control serious arterial bleeding, which can also kill within minutes, you need a dressing (preferably sterile) and something to hold it in place. In the stream-crossing accident described above, you would first apply pressure to the spurting wound with anything in reach, if only the palm of your hand; at some point you'd have to replace your grip with a secured dressing. For most bleeding wounds a 4" x 4" sterile gauze pad works well, and five thicknesses are usually enough to help form a good clot. (That's why these pads come in packets of five.) For activities that carry

a high risk of open wounds, your kit might also include two battle dressings—antiseptic pads with long bandages that can quickly be secured to almost any part of the body. An expedition kit might also include very large (8" x 10") gauze pads.

For wounds on awkward corners of the body, you can get specialized dressings or stretchy dressing-bandages with adhesive strips or other fasteners. A good selection of Band-Aids (preferably with nonstick pads) will cover most small wounds. Butterfly closures are often used (even by doctors) to close gaping cuts as an alternative to the traumatic procedure of suturing. These sterile adhesive strips with a narrow bridge in the center hold wounds shut without pressing on them.

Blisters deserve special attention in the wild. Backpackers know (but often forget) to cover sensitive spots on their feet with tape or moleskin before blisters develop. Once a blister begins to rise, you need to surround it with the tradi-

tional moleskin doughnut to ease the pressure. A further refinement that alleviates pain and friction even on bloody, broken blisters is to lay a piece of Spenco 2nd Skin (a soothing, slippery gel) into the hole of the doughnut, then cover the whole thing with a large piece of moleskin or tape. Mole foam, a bulkier adhesive, is good for spot-padding boots to customize their fit and cover the edges of exposed seams.

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## *Fractures and Splints*

**S**plints can be improvised from poles, ice axes, the staves of internal-frame backpacks—anything that will support and immobilize the fractured limb—but use lots of padding! The job will usually be easier, however, with a wire splint. Carried by many ski patrollers, it weighs only a few ounces and folds or rolls up compactly. To make one, cut a 6" piece off a 30" roll of hard-

# Do-It-Yourself Wilderness First-Aid Kit

**U**ses of most items are explained in the accompanying article. Basic items are printed in boldface; readers can select other items to fit their needs and budgets. Brand names are capitalized; generic names are lowercase. Where quantities are given, the suggested minimum is for a personal kit, the maximum for up to a dozen people. Hazards, trip length, and distance from help also need to be considered when estimating quantities. Asterisks indicate preventive or multi-purpose items usually not kept in the first-aid kit.

Refrigerate all medications between trips, and if you repackage them, copy both the expiration dates and dosage information onto the new label. Prescription medications are marked Rx.

## CONTAINERS

vinyl envelope (transparent) with zipper for personal kit

nylon zipper bags with compartments (various sizes sold by backpacking stores)

Freezette or Tupperware containers (transparent) —secure the lid with a nylon strap

military surplus ammunition boxes (usually come in three sizes, very sturdy and waterproof)

ziplock bags to organize and protect dressings, etc.

## DRESSINGS & BANDAGES

Item	Quantity
<b>sterile gauze pads in packets of 5; 4" x 4", 8" x 10"</b>	2 to 6 packets
<b>battle dressings</b>	2 to 6
<b>Band-Aids with nonstick pads</b>	10 to 100
<b>gauze rolls, 3"</b>	2 to 6
<b>triangular bandages</b>	2 to 6
<b>athletic tape, 1/2"-3/4"</b>	1 or 2 rolls
<b>waterproof adhesive tape, 1"-2"</b>	1 or 2 rolls
<b>fiber tape or duct tape*</b>	1 roll
bias-cut stockinette	1 to 4
<b>Ace bandage, 4"-6"</b>	1 to 4
<b>moleskin</b> or skin guard	1 to 4 sheets
<b>Spenco 2nd Skin</b> or Spenco Blister Kit	1 to 4 packets
mole foam	1 to 4 sheets
butterfly closures	16
knuckle bandages	1 to 2 packets
eye patch	1 to 4
fingertip bandages	2 to 12

## SPLINTS

Item	Quantity
<b>wire splints, 6" x 30"</b> or wire ladder splints	1 or 2
air splints, full arm and leg	2 to 6
tongue depressors for finger splints	1 or 2 of each
	1 to 6

## DISINFECTING & CLEANING AGENTS

<b>liquid soap*</b>	<b>water-disinfection equipment*</b>
surgical scrub (to clean hands)	filter (Katadyn or First Need) or Sierra Water Purifier (chemical)
<b>alcohol prep pads</b>	
<b>povidone-iodine (10%),</b> prep pads or bottle	sterile saline solution in squeeze bottle or 30ml syringe (to flush out wounds)
benzalkonium chloride prep pads	mini-marshmallows (to remove contacts safely)

## TOOLS

universal (paramedic) shears\*  
seam ripper\*

**sharp knife,** Swiss Army type (with screwdrivers etc.)\*  
sewing kit\*

needle-nose vise grips\*

### Uncle Bill's Tweezers

Tick Tongs

Sawyer's First Aid Kit Extractor

### safety pins\*

cotton swabs (Q-Tips)

**small waterproof flashlight** with lithium battery

steel mirror\*

small magnifier (included on some Swiss Army knives)\*

spare sunglasses with unbreakable polycarbonate lenses\*

whistle\*

oral thermometer

low-reading  
rectal thermometer

hand/body warmers\*

Space Emergency Blanket\*

coldpack

nylon cord (1/8")\*

hose clamps (4)  
for improvising litters

**pencil and notepad\***

**coins for phone**

**small first-aid reference book**

## MEDICATIONS & PROPHYLACTICS

Item	Brand name	Application
<b>aspirin and/or ibuprofen, 200 mg.</b>	buffered or enteric-coated Motrin or Advil	for relief of pain and swelling
Rx acetaminophen [Tylenol] with codeine		for relief of mild to moderate pain
Rx codeine		oral narcotic for relief of severe pain
Rx pseudoephedrine	Sudafed	decongestant
diphenhydramine hydrochloride	Benadryl	antihistamine, for asthma or allergy
epinephrine hydrochloride [adrenaline]	inhaler	for severe allergic reaction or asthma
antacid tablets		
meclizine anti-nausea tablets		
Rx promethazine hydrochloride	Phenergan	suppositories for nausea
laxative		
Rx Lomotil tablets		for diarrhea
Rx acetazolamide	Diamox	for acute mountain sickness
<b>triple antibiotic ointment</b>		
or Rx Neosporin ophthalmic ointment in foil packets or tube	or tube	also a topical antibiotic
Rx erythromycin		oral antibiotic for mild to moderate bacterial infections
Rx ampicillin or cephalixin	Keflex	for severe bacterial infections
<b>powdered electrolyte mix*</b>	Gookinaid	for restoring fluid and salt balance
oil of cloves		for toothache
hydrocortisone cream, 5% (Rx 1%)		to relieve itching
Rx lidocaine hydrochloride ointment (5%)		topical anesthetic for scrapes etc.
antifungal powder or ointment		to prevent and treat athlete's foot
<b>sunscreen</b> with PABA*		
<b>sun block*</b> (zinc oxide)		
lip balm*	ChapStick	
<b>insect repellent</b> with 95% DEET*		

ware cloth (1/4" wire mesh, available at hardware stores). Trim the projecting wires from the cut ends and cover them with tape. This kind of splint can be bent to accommodate any angle, and is quite strong when contoured to the shape of the limb.

To hold splints or dressings in place, you'll need a selection of bandages and other fasteners. Triangular or cravat bandages are highly versatile: They can be used as slings for injured arms or to secure people to stretchers.

A triangular bandage is made by cutting a piece of muslin or old bedsheet, at least one meter square, on the diagonal. This will give you two triangular bandages. Hem the cut edges and you have two deluxe triangular bandages. Rolls of elastic gauze are good for general wrapping; the 3" width seems to be most useful. You should also have two rolls of tape: a narrow (1/2"-3/4") roll of athletic tape to hold dressings in place without cutting off airflow, and heavy-duty adhesive tape (1"-2"). An elastic bandage can brace a gimpy knee, but it can also interfere with circulation, especially if it is too narrow (less than 4" wide). A set of strong safety pins completes your collection of basic fasteners.

In freezing weather, the hand or foot of a fractured limb is very vulnerable to frostbite. Damage to blood vessels by broken bone ends, splint fasteners, and the victim's inability to move the splinted limb tend to interfere with circulation. In this case, one or two handwarmers, well wrapped and secured, may be the only way to keep the extremity from freezing. Or you can get cheap disposable warmers that weigh less than three ounces and give up to 20 hours of heat.

## Tools

**I**n first aid as in any other craft, you can do a job better and more easily with the right tools. One of the most basic operations is cutting: dressings, bandages, and (if there's no other way to get at an injury) clothing. For a pocket kit you can make do with the

tiny scissors on your Swiss Army knife. A larger kit should include a set of universal shears (also called paramedic or EMT shears), available from medical supply stores and some hardware suppliers. These are offset, self-sharpening stainless steel bandage scissors (the tip of the bottom blade is blunted to slide over skin harmlessly) with plastic-covered grips large enough for your whole hand; yet they weigh only two ounces. Test them by cutting a penny in half.

If you do need to take apart clothing, it will be easier to stitch together again if you open the seams with a seam ripper rather than shred the fabric. Needle-nose vise grips can be used as needle holders as well as serve many other functions. A (sterilized) needle from your sewing kit can be used to remove splinters, but Uncle Bill's Tweezers are perfectly designed for the job. Short and broad, they are easy to manipulate, and come to a sharp point so you can grip and pull out even tiny metal or fiberglass hairs. Tick Tongs are more specialized tools that can be used to grip a burrowing tick and rotate it out with one hand (if oil or heat on its rump do not persuade the critter to withdraw).

Snakebite kits, though heavily publicized, seldom make much difference. If you apply suction within a few minutes after venom is injected, you may get some out. But persuading the victim to stay calm and avoid exertion until you can get to a hospital for antivenin is far more important. About 8,000 people in the United States are bitten by poisonous reptiles each year, but only 10 to 20 of them die from their bites. Sawyer's Extractor, which does not require incisions, can also be used to remove more commonly injected insect venom. The pump assembly becomes useless if wet, however.

## Disinfecting and Cleaning Agents

In the old days, we anointed open wounds with tincture of iodine. This killed many of the intruding bacteria (and did much to build character), but it also killed surrounding flesh, making it defenseless. Mild antiseptics like povidone-iodine (Betadyne) inhibit bacteria

without destroying the body's defenses; they are sold in convenient little foil packets as well as bottles. However, plain soap and water to flush away dirt—followed by a sterile dressing—is often the best treatment for small or superficial wounds. Keep a small tube of biodegradable liquid soap in your kit, and use it to wash your hands before treating a wound. In the absence of water, alcohol prep pads do a reasonable job of cleaning hands and the skin around a wound—but remember to wipe radially away from the wound! To get hands really clean, you can carry a small squeeze bottle of surgical scrub. And if you're worried about wounds becoming infected, you can carry antibiotic ointment, also available in foil packets.

## Medications

All medications should be used sparingly. You can avoid most of the discomforts that might tempt you to use medications in the backcountry by taking care of yourself: putting enough water and fuel into your system, disinfecting drinking and cooking water, acclimatizing and dressing properly (see "Blood, Sweat & Chill," January/February 1985).

Sometimes even the most humble over-the-counter drug can have side effects. Used with caution, however, medications can prevent a trip from becoming an ordeal, and can free you from distracting discomfort. Burns and many wear-and-tear injuries involve swelling or inflammation, especially in heavily used joints like knees; aspirin and ibuprofen are anti-inflammatory as well as analgesic (pain-killing). Antihistamines or decongestants may help if narrowed or clogged air passages make breathing (and sleeping) difficult. Epinephrine is a potent, dangerous drug (available over the counter in spray form), but it might save the life of a victim in anaphylactic shock (suffering severe allergic reaction to insect venom or other foreign protein) by opening constricted breathing passages. Gastrointestinal miseries, though usually preventable, are debilitating and very common; a variety of over-the-counter remedies is available to provide relief.

Drugs can help restore the balance of

your bodily functions, but they also have the potential to upset it even more. The wilderness first-aid kit listed here (page 56) includes a selection of both over-the-counter and prescription drugs for the backcountry. It's best, however, to cultivate a skeptical physician or pharmacist, or browse through some of the side effects listed for each drug in a standard source like the *Physician's Desk Reference*, before you cram your kit full of pills.

## Putting It All Together

A good pharmacy will have many of the supplies you need for your first-aid kit; backpacking stores often stock the more wilderness-oriented materials. For some items, like universal shears, you may have to go to a medical supply store.

Putting your own kit together is worth the trouble, though, for several reasons. First, it makes you think about what you need and whether you have the training to use it. Second, if you buy one of the prepackaged commercial kits on the market, you will still have to spend time and more money adding and subtracting things to make it functional. Third, you'll need to restock your kit periodically anyway, so you might as well find your supply sources now.

No matter how well trained and equipped you are, remember that you can't be a walking hospital. Even physicians may not be able to provide adequate medical care in the backcountry. Your priorities as a first-aider are to try to save lives, to minimize damage from serious injuries, and to minimize discomfort and complications from minor injuries. In other words, an artistic bandage won't do much good if the victim is dying of shock or hypothermia while you're applying it. On the other hand, having adequate first-aid equipment and training will help you handle emergencies quickly and efficiently, so you can turn your attention to surviving (and even enjoying) the rest of the trip. ■

STEVE DONELAN is a volunteer first-aid instructor and instructor trainer. He developed the wilderness first-aid courses he teaches at the Oakland, Calif., Red Cross.

As buzzing aircraft cloud the skies over many of America's most treasured citadels of silence, conservationists try to make their protests heard above the racket.



*In recent years the national bird has had noisy company in the skies over the Grand Canyon. But that could change if a recent lawsuit brought by the Sierra Club against the FAA and the Park Service succeeds in forcing the agencies to regulate sightseeing flights.*

One night last August, Beach Pitzer drove to Towheap Point, a remote and breathtaking overlook on the Grand Canyon's North Rim. He expected to spend a quiet, relaxing weekend.

"When I woke up, I thought I was camped on the runway at Phoenix Airport," Pitzer testified at a recent Park Service hearing. "There were 25 planes in 30 minutes. The serenity is gone."

Silence and serenity are indeed becoming hard to find in parks and wilderness areas from Hawaii to Maine, thanks to an all-out invasion by aircraft, our society's noisiest machines.

In Glacier National Park, tourist helicopters are "dive-bombing" the largest concentration of grizzly bears in the Lower 48, according to Doug Peacock, who has studied the bears for 11 years. "The noise blast of hovering choppers chases them off and affects their social behavior and feeding habits," he says.

In the spectacular Sierra Nevada wilderness **Dennis Brownridge**

# FILLING THE PARKS WITH NOISE

of Sequoia National Park, jet fighters "scream up the Kern River Canyon, circling Mt. Whitney and doing rolls and spins," complains Judi Zuckert, a former backcountry ranger.

And almost everywhere, commercial jetliners echo across the sky, scarring the visible atmosphere with contrails—the "worms" scorned by photographer Ansel Adams.

Park officials say aircraft are the number-one problem in the vast Grand Canyon, long revered for its magnificent, all-encompassing quiet. An estimated 100,000 tourist planes, helicopters, and military aircraft now fly in and over the canyon each year. In the backcountry their noise is audible as much as 95 percent of the time during the day; it's not unusual to hear three or four aircraft simultaneously, the noise of their props and rotors reverberating off the canyon walls.

It's hard to imagine how intrusive aircraft can be in the wilderness until you've experienced their noise







Thomas Nathan

firsthand. It's not just a matter of aesthetics, as one river rafter points out: "You can ignore a beer can, dispose of it or look the other way—but you can't shut your ears."

Peace and quiet have always been considered inseparable from nature and wildness. Railroads were kept out of national parks from the beginning because of their noise and smoke. (The railway that runs to the Grand Canyon's South Rim was in place before the park was designated in 1919.) When automobiles appeared, they too were banned from the parks, though pressure from auto clubs and local merchants later forced a partial retreat from that policy. The intrusion of roads and motor vehicles into the parks and national forests spawned a second wilderness movement in the 1920s, led by Aldo Leopold and Bob Marshall, "to save from invasion that extremely minor fraction of outdoor America which yet remains free from mechanical sights and sounds and smells." This movement culminated in the 1964 Wilderness Act, one of the fundamental purposes of which is to keep motors and mechanical vehicles (including bicycles) out of wilderness areas.

Yet no one foresaw the tremendous proliferation of aircraft, the noisiest motor vehicles of all. They had scarcely been invented when most of our parks were established, so the upper boundary of parks and wilderness areas was never defined. In 1958 the Federal Aviation Administration (FAA) was given effective jurisdiction over all airborne vehicles, and charged with the contradictory task of both regulating and promoting air travel. While conservationists were busy keeping ground-level highway builders at bay, the FAA was setting up a dense network of airways and jet routes, giving little thought to their impact on the ground below.

Today, flying a plane or helicopter is the only thing you can do in a national park or wilderness area without restrictions of any kind. Outside developed areas, there are no mandatory min-

*Tourists at Mt. Rushmore can pay for an eye-level view of the famous monument even as Park Service personnel report earth-bound visitors complaining about the noise.*

imum altitudes for pilots to observe.

At the request of the National Park Service and the Fish and Wildlife Service, the FAA advises all pilots to stay 2,000 feet above the ground over designated natural areas, but the advisory is not binding and is widely ignored. In any case, environmentalists say, 2,000 feet—about three city blocks—isn't high enough to reduce noise levels significantly. "Imagine a wilderness in which you can never get more than three blocks from a pack of unmuffled Harley-Davidsons," says a sympathetic pilot.

The mix of aircraft problems varies from region to region. Commercial air tours are expanding rapidly in some of the most beautiful and popular areas of the national park system. They're attractive opportunities for entrepreneurs (who don't need concessionaire permits to run their airborne businesses) because they allow parkland values to be exploited with immunity from park and wilderness regulations—so long as the machines don't touch ground. (The Grand Canyon routes alone bring tour operators an estimated \$40 million to \$50 million a year.) Catering to well-off tourists, helicopter and plane tours are completely out of control in the Grand Canyon and Hawaiian parklands; they are entrenched in Glacier, Bryce, Mt. Rushmore, and several Alaskan parks; and they are making inroads at Yosemite, Yellowstone, Zion, and Chaco Canyon, among other places.

Wilderness landings—legal or not—by hunting, fishing, rafting, heli-skiing and heli-hiking companies are also a

*A commercial jet that goes out of its way to fly over a natural area can leave disquieting signs of its visit even after the noise trails off.*



*Tourist flights promise visitors to Kauai access to stunning, isolated vistas—but at what cost to wilderness values?*

growing concern. Idaho's vast River of No Return Wilderness has two dozen airfields within its borders, some reported to have as many as 75 landings a day as hunters haul out their trophies. On Hawaii's Kauai Conservation Lands, illegal helicopter landings are so common that the state has vowed to confiscate any choppers it catches. (A helicopter is reported to have killed the last wild eagle on the island.)

Some of the angriest complaints are about military aircraft, which are far louder than civilian craft and often fly just yards off the ground. "We have hot jet fighters roaring through here making big turns over the park," says Steve Fuller, a Yellowstone winter ranger. "In five minutes their noise probably floods the whole park. I've seen a flight of Hueys

[Army helicopters] in formation doing figure eights over the Grand Canyon of the Yellowstone. It's like a replay of the village attack in *Apocalypse Now*."

"National parks are very special places. There's plenty of other land for the military," says former Sequoia

ranger Zuckert. "They're just here because it gives them a rush to shriek upside down at 500 miles an hour through Kern Canyon."

The military already owns some 25,000 square miles of the West—much more territory than is occupied by all the region's national parks and monuments combined—but vastly greater areas have been appropriated for off-the-ground war games. These huge "military operations areas" and "supersonic operations areas" cover virtually all of Sequoia,



*Hot-dogging it over Sequoia National Park, this F-16 fighter is only a thousand feet above the floor of Kern Canyon.*

Kings Canyon, and Lassen Volcanic national parks in California; much of Olympic National Park in Washington; Death Valley, White Sands, and Organ Pipe Cactus national monuments; various wilderness areas, national wildlife refuges, and Indian reservations; and many thousands of square miles of magnificent mountain and desert country managed by the Forest Service or the Bureau of Land Management.

Two of the largest national wildlife refuges outside Alaska—Cabeza Prieta in Arizona and Desert in Nevada—have been taken over by the military as bombing or gunnery ranges. Still other natural areas are crossed by very low altitude "military training routes" used for navigational exercises. The Pentagon claims it will continue to need free access to airspace over natural areas "to provide the specialized training to achieve and maintain a high degree of readiness for its forces." (See "Domestic Maneuvers," July/August 1985.) Even

so, it seems clear that most military activity in the nation's parks and wildlands is unauthorized joyriding well outside or below any designated military airspace.

"After they finish a mission, pilots race until they burn up their gas," says Yosemite Chief Ranger Dick Riegelhuth. "They tell 'em, 'Okay, fellas, school's out—go play.'" In February a Navy jet fighter flying illegally only 75 feet above the treetops in Sequoia National Park nearly collided with a Park Service helicopter.

Park officials around the country say they've had little cooperation from the military in catching or punishing violators. "They know we can't read the tail numbers on the planes," says John Kraushaar, a Sequoia ranger. "But if we do identify a pilot, the military refuses to tell us what happens to him."

In the Grand Canyon, military aircraft routinely fly below the rim, even though it's listed as a "no fly area" by the Air Force. A former Air Force officer says pilots even have an unofficial "below the rim" club, complete with flight-bag emblems.

The problem is not new, but it's growing worse with the current massive military buildup. In 1971, after sonic booms had collapsed cliffs in Mesa Verde National Park and destroyed 3,000-year-old Indian ruins in Yellowstone and Grand Teton, Park Service Director George Hartzog told Congress he could not get any meaningful response from the Pentagon. "It's truly devastating," he testified. "I think it's disgraceful that our military carries on this way."

Strong criticism has also been leveled at the land-management agencies responsible for maintaining the parks' natural values. "What offends me most is the frivolous use of aircraft by the Park Service," says Dave Smith, a former Yellowstone ranger. "They set such a poor example. Administrators are so insensitive: They say the noise impact isn't permanent, but it's out there as long as they're flying."

At most parks, emergencies such as search-and-rescue account for only a small fraction of aircraft use. The remainder includes everything from fire suppression to VIP tours to servicing backcountry toilets. Critics contend that

contracts between the Park Service and private aircraft operators encourage excessive aircraft use.

Concerned environmentalists say that things will only get worse unless special-use airspaces are established for parks and wildernesses, like those over Minnesota's Boundary Waters Canoe Area, the vast military reservations of the West, and President Reagan's ranch in California. Corridors could be provided for legitimate through traffic.

A major stumbling block is the powerful FAA, which opposes airspace restrictions except when requested by the military. "We've attempted to get the airspace over Yosemite closed, but the FAA has not cooperated at all," says Don Fox, the park's landscape architect. "It may take an act of Congress." Many also fault park officials: "The Park Service has been absolutely spineless on the whole aircraft issue," a veteran Yellowstone staffer claims.

**E**VERYONE IS WAITING to see what will happen at Grand Canyon, the only park specifically required by Congress (in 1975) to take action against aircraft. The park has dragged its feet for ten years, while its air traffic has mushroomed 500 percent as operators scramble to get in on the bonanza. In response to pressure from environmental groups, public hearings were finally held last fall and received nationwide media coverage.

Arizona Governor Bruce Babbitt, an avid Grand Canyon hiker and skier, testified that aircraft have destroyed the "pervasive sense of peace and tranquility" he remembers. "They wake you up at six in the morning, shattering the silence," he said. "I could find more peace and quiet on the midway at the state fair."

If people don't like the noise, they can go elsewhere, responds Elling Halvorson, vice-president of Grand Canyon Airlines. "One wouldn't pick Coney Island to have a pristine beach experience," he adds.

Promoters of aircraft rides over natural areas contend that they provide a wilderness experience to people in a hurry or to those without the inclination or ability to visit the parks on the ground, especially the handicapped.

"Don't use the disabled as an excuse," retorts quadriplegic Peggy Thomas, president of the northern Arizona chapter of the Spinal Cord Society. Thomas says one air-tour operator would not take her on a Grand Canyon ride because of her disability. She later took a raft trip with other wheelchair-bound people and found it "a beautiful, quiet, and peaceful" way to experience the wilderness.

**P**ROPOSALS TO MITIGATE the intrusive impacts of park flights are coming from several sources. A bill introduced in Congress this spring calls for a study that would recommend appropriate altitudes for aircraft over all Park Service units. In Arizona a coalition of environmentalists that includes the Sierra Club has prepared a detailed plan for the Grand Canyon, to protect its beauty and tranquility for all to enjoy. And in May the Park Service released six alternative recommendations of its own for the canyon, varying from continued inaction to establishment of voluntary flight-free areas that, even if honored, would protect only 11 percent of the park, though none of it would be noise free. "They're cosmetic," Sierra Club Grand Canyon Chapter Chair Sharon Galbreath says of the Park Service proposals. "They range from no action to no good. What's missing is 'no airplanes and no noise.'"

"We're dealing with a problem affecting the entire park and wilderness system," says Tony Ruckel of the Sierra Club Legal Defense Fund. "It's intolerable, and if it isn't drastically curtailed, we're prepared to litigate." Rick Sutherland, SCLDF's Executive Director, asks plainly, "What good is it to have fought all these battles for so many years to save parks and wilderness if they're being degraded like this?"

A generation ago, naturalist Joseph Wood Krutch prophetically asked a question of his own: "How long will it be before . . . there is no quietness anywhere? . . . Perhaps when . . . there is no more silence and no more aloneness, there will also be no longer anyone who wants to be alone." ■

DENNIS BROWNIDGE, a geographer in Tucson, Ariz., is active in the fight against aircraft intrusion in the wilderness.

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# TOUGHER BY THE MILE

**A DECADE AGO, TECHNICAL ADVANCES HELPED A FEW BOLD RIVER RUNNERS TACKLE THE WEST'S MOST CHALLENGING WHITEWATER. IT COULD BE YOUR TURN NEXT.**

Larry Orman

**A**T MIDNIGHT the Sierra foothill town of Groveland is deserted, save for the occasional customer weaving out of the Iron Door bar. It takes me less than half a minute to drive through the circles of light cast by the streetlamps before I'm again heading along Highway 120. Signs show the way to Yosemite, 50 miles distant. After another 15 minutes I reach the turnoff for Holm Powerhouse and the twisting ten-mile descent into the blackness of the Tuolumne canyon. The final yards of asphalt cross a small creek and stop at the put-in point for trips on the Upper Tuolumne River.

Parking on the flat above the river, I quickly jump out of my car, nervous energy uncoiling as I look for the stream rushing loudly 30 feet below. The work-lights of the large powerhouse cast a faint glow on the few cars parked on the small plateau, but the river remains shrouded in darkness. I walk back, crawl into my sleeping bag, and lie awake listening to the unsettling rhythm of the power plant's hum.

Before I left home to drive here, an old friend who runs a commercial rafting company looked at me quizzically when I said I was going to run the Upper Tuolumne in a paddle raft. He and a few other guides made the first paddle-boat run of this river ten years ago. I remember the slides they brought back: their boat being wedged through a four-foot crack by the force of the river, then dropping ten feet while they held on for

all they were worth.

I argued with myself that a lot has changed since then. Commercial trips in lightly loaded oar rafts have been going down the Upper T for four years. But I recalled the reactions of two friends who guided on those trips and have quit. "Every single oar stroke has to count," said one. "It was just too intense."

I've been both a professional guide and a private rafter for the past 15 years, and have thousands of miles behind me on rivers all over the western United States. So why do I feel so much concern over this trip?

The power plant's buzzing finally lulls me into an uneasy sleep.

**T**HE UPPER TUOLUMNE, arguably one of the toughest commercial whitewater runs west of the Mississippi, is the best place to see evidence of a major change in whitewater rafting.

The international scale used by most rafters (and kayakers) to describe the difficulty of rapids ranges from Class I to Class VI, the former signifying the easiest currents and the latter the most severe. The ratings vary with water conditions, type of craft used, and often the perceptions of particular river runners, but they provide a general sense of what to expect.

Throughout the 1960s and most of the '70s, Class III and sometimes Class



*It's over the top and quickly on to other challenges for this raftful of river runners tackling Toadstool, one of the many Class V rapids that make the Upper Tuolumne so exciting.*

IV river rafting (rocky drops, lots of whitewater) was the norm. Class V rapids—the most difficult to run without a major risk to one's life—were occasionally run, but only where they were an exception to the overall character of the river. As for Class V rivers—those with many of the most difficult types of rapids—well, hardly anyone could imagine taking on such a challenge.

A small group of very talented river runners changed all that in the late 1960s, starting with the kayakers in their long, sleek fiberglass boats. But even after the Upper Tuolumne was first run in 1969, kayakers continued to regard a large number of wild rivers as too tough even for their highly maneuverable craft.

So it came as something of a surprise when, on a cold April day in 1973, a party of four led by Marty McDonnell ran the Upper T in two small experimental rafts. After that spectacular achievement, a few more Class V runs were pioneered, including the first paddle-raft descent of the Upper Tuolumne in 1976.

In the late 1970s a new generation of

kayakers began exploring the limits of what could be run. The exceptional talent and courage of the best of them, combined with the durability of the newly developed plastic kayak, opened up dozens of runs long considered risky, if not suicidal. As before, rafters followed the kayakers' example, and by the summer of 1984 the transformation was complete: No longer would hair-raising stories about Class V river running come only from a few hardy adventurers. With the establishment of commercial trips on many challenging rivers, Class Vs had become a permanent feature of western river rafting.

The Upper Tuolumne's Class V rating is reinforced by the river's statistics: At medium water levels—800 to 2,000 cubic feet of flow per second—it has six Class V rapids and more than 15 strong Class IVs. But more important is the fact that for nine miles there is rarely a calm stretch in the river as it drops 105 feet per mile.

To understand the severity of that gradient, consider that the very challenging main Tuolumne run—one of the premier rivers in the West—averages 40 feet of drop per mile. Of course, few rivers drop consistently; though the first six miles of the main T average 65 feet, the going soon gets easier. By contrast, the last mile of the Upper T carries a gradient of 200 feet. It's a river that gets tougher by the mile.

**T**HE TRIP I'M TO GO ON, one of Marty McDonnell's Sierra Mac outings, will be the first time paddle rafts have been run commercially on the Upper Tuolumne.

The difference between maneuvering oar- and paddle-powered rafts is dramatic. Take a 15-foot raft, put a boxlike metal frame on it, attach two nine- or ten-foot oars and a competent guide to work them, and you've got a craft that can easily carry a large load. But take the same raft, give canoe paddles to each of four to six people, add a guide, and you've got a whole different ball game.

The only sport remotely like paddle rafting is high-speed team tobogganing. It's rare that you find an opportunity for a group of people to sit in a six-by-twelve compartment, come together as a team, then start off down an exhilarat-

ing course filled with sudden drops and large waves, where everyone's active participation is needed for the safety of all.

**A**S THE MORNING SUN cuts through mist that rises from the hills around us, people are stirring at the parking area—shaking out sleeping bags, cooking, and unloading gear from an ungainly yellow panel truck. There are 15 passengers (including myself) and four guides. It's 8 a.m. and a bit chilly.

As pumps wheeze away, the orange-and-black self-bailing rafts that had been stacked on the edge of the flat begin to unfold in the damp morning air. A significant improvement over the black neoprene "bathtub boat" that dominated the sport in its early days, the self-bailer—the brainchild of whitewater master Jim Cassidy—is nothing less than a totally new concept, and it is creating a lasting change in what people can do on rivers. The floor surface is lifted off the water, making the craft behave like a kitchen strainer: Water will come in, but it drains right back out. (The troublesome wall-to-wall fabric floor of the old-style rafts makes them fill up like swimming pools.) In a self-bailing raft the floor itself is inflatable, so it's rigid and gives your feet a stable platform to press on when you take paddle strokes. You can even pull out the floor and sleep on it.

When the boats have been inflated, rigged, and lowered down a cliff to the river, attention turns to ourselves. We pull on the full-length wetsuits popular among windsurfers, with neoprene body sheath and flexible armlets. Life jacket, paddle, and plastic kayaking helmet complete an outfit that makes each member of our party look like a serious river runner.

Preparations for a trip like this seem to go on forever. But when the time comes to go, following the obligatory safety talk by Class V pioneer Mark Helmus, the pace accelerates to breakneck. Helmus asks for any final questions. We all look around at each other, nervousness and excitement in the air. "Okay, then," he says, "load up!"

Scrambling down the eroded cliff, seven of us, including Helmus, climb into one paddle raft, five occupy each of two others, and two claim space in an

oar raft. We make a few checks, then bang!—off we go, entering a Class IV rapid within 20 yards. No time for practice here: The people on this trip are all supposed to have substantial experience.

"Forward! Stop! Hard right turn . . . hard right . . . forward!" Helmus snaps out commands with whip-sharp precision. After two minutes of paddling it's clear to me that he's not just a good paddle captain—he's exceptional.

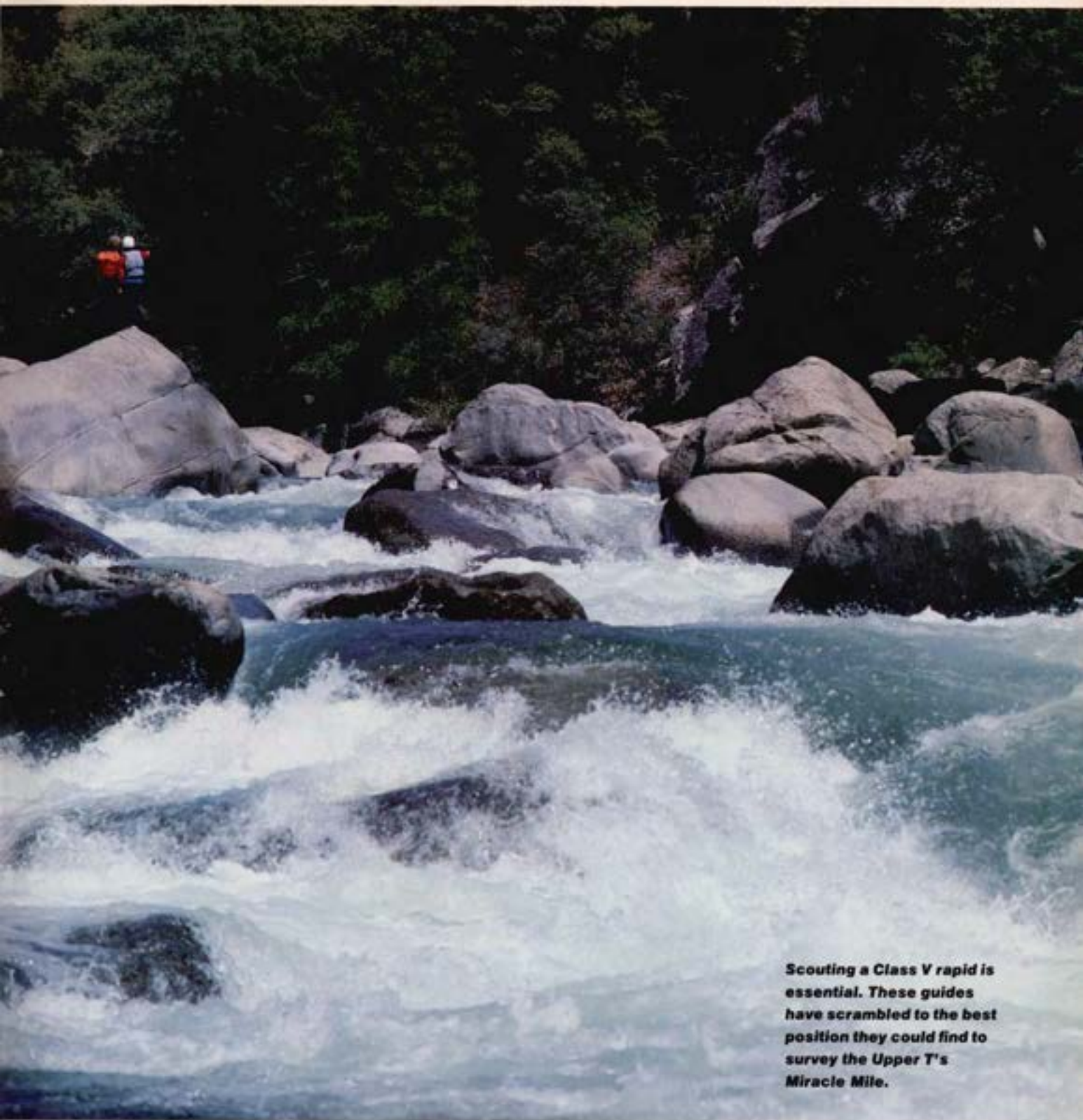
And something else works into my awareness: The raft handles like a dream. I can actually feel it transmit the power of our strokes. We're plunging over three-, four-, and five-foot drops in rapid succession, feet rooted firmly under stirrups attached to the rigid inflated floor. I can reach out for a hard forward or backpaddle stroke in the middle of churning waves and pour-overs with total security. No more bathtub boats for me!

**T**HE UPPER TUOLUMNE unfolds its challenge—and its effervescent beauty—as we hit the major rapids. Guillotine, a sharp pitch-over. Catapult, a snappy dogleg. Jawbone, the first really rocky rapid, with lots of large boulders and numerous drops. When we reach Mushroom, the first Class V rapid, we tie up the boats for a few moments to scout from shore.

Scouting a rapid is a ritual. People talk and gesture in small clusters. The guides move around, conferring now with each other, now with their inner competence. For those of us who haven't seen it before, Mushroom is a shock: an enormous boulder patch with narrow entry points and a very threatening cluster of rocks and waves on bottom left. Bottom right looks truly dangerous.

Helmus' eyes sweep the rapid for the basic route he knows, checking key points to stir his memory, talking to us about the route we'll take. Walking back to the boats, he concentrates intensely.

In memory, the run replays in slow motion. Climb into boat, coil bowline, place feet under stirrups, rotate paddle grip, nod okay at Helmus. "Let's back out. . . . Easy forward." Slide over a flat rock into a green and white eddy—that's the point of no return. "Forward!" One stroke, two, three: "Forward!" The boat is angling toward the first, critical chute.



**Scouting a Class V rapid is essential. These guides have scrambled to the best position they could find to survey the Upper T's Miracle Mile.**

and suddenly everything starts to move very, very fast.

*"Hard backpaddle! Hard! Hard!"* Halfway down the channel my feet strain to hold my body in, and hands, arms, and back all strain to give as much power to the stroke as my 175 pounds can muster.

Past the chute now—don't get pushed right! *"Backpaddle! Keep backpaddling!"* The momentum slowly shifts left, and now the spectacle of Mushroom Rock itself, an enormous cap of whitewater exploding off a granite boulder. My heart is pounding the proverbial mile

a minute. *"Hard forward! Hard!"* A wrenching reversal in direction, then down into the steep-angled ten-foot drop . . . and whoops of delight and relief from all of us as we shoot by the rock into the large standing waves below, catching an eddy just above an-

other very nasty-looking boulder patch.

Start to finish, it takes 70 seconds. One hell of a run.

**T**OADSTOOL, the next rapid, is run without incident. We're feeling settled now, and competent, as all the boats in our trip move through the first section of Miracle Mile. Our raft pulls into an eddy on the right bank so we can scout the top of the next run—the beginning of one of the 180-foot-drop-per-mile sections. I turn to look at the rapid's entry and catch a flash of Jim Cassidy's bright-blue paddle raft moving out of sight around a large boulder that guards the opening. In an instant the left-side tube of his boat reappears from behind the rock—but now it's standing still, sticking straight up in the air with the black floor facing upstream.

"I think we've got a flip," I say, confused about why the boat's tube hasn't gone over from its vertical position. Helmus looks over, calls sharply for us to tie up, grabs a throw bag, and dashes across the boat and down the bank. The rest of us follow fast.

A glance tells it all: Cassidy's raft is wedged on its side, perpendicular to the current, up against a hidden rock in the middle of the turbulent channel. The force of the fastest water is surging up against the lower tube, then streaming past both ends of the tipped-up raft. On the right side is Cassidy, pinned to the rock from the waist down by the boat.

Helmus scrambles down to the river, looking for a way to get out to the trailer-size boulder that sits 15 feet to the right of the raft. On the left bank three people are moving back upriver, Cassidy's close friend Bill Carlson in the lead. Reaching the shore across from the wrap, Carlson gestures frantically to Cassidy to slash the boat, the roar of the rapid drowning out voices. Cassidy shakes his head no: His knife is strapped to his left leg, out of reach as the streaming whitewater comes off the raft's tube and ricochets off his back. Fifteen feet of whitewater separate Carlson from the boat, and below are 80 yards of steep drops and waves. Cassidy is visibly tiring from the effort of using his arms to stay upright, and his head is dropping closer to the current.

On the other side, Helmus dives into



**There's no time for sightseeing on a Class V trip; every passenger works hard to keep things flowing smoothly . . . or at least safely.**





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the rapid and swims hard toward the boulder, just making it into the eddy in back, safe from the current that tears down the rest of the rapid, but an impossible ten feet from Cassidy.

At the same time, Carlson makes a desperate jump toward the raft, grabbing the nylon-webbing bow line that has somehow, almost unbelievably, come free from its pocket and is dangling in the current like a fishing line. He goes under, then comes up with the line as the press of the current flows over him, pushes him downriver, then stretches the webbing taut.

Nothing happens for ten seconds. Then the raft gradually begins to slip to the left of its perch. Cassidy is pushed right and lunges for rocks to climb out on, succeeding on the second try. Carlson, also able to reach a rock, looks over to Helmus on the boulder; then he wipes his right hand across his forehead and thumps his left over his heart in an exaggerated gesture of relief.

As close a call as they come.

**I**T'S MIDAFTERNOON. We've gone five miles and are all a bit tired, despite the lunch we quickly and inelegantly downed after the flip. Now we face the huge boulder sections in lower Miracle Mile, where the rapids become longer and more complex as the drop edges up to the 200-feet-per-mile mark.

Imagine driving in the wrong direction on a crowded freeway, large objects whizzing by as you attempt to move through. But instead of turning one steering wheel to maneuver, you must call directions to six people, each of whom has a steering wheel. High-gradient, extremely technical rivers like the Upper Tuolumne pose just this kind of challenge to guide and crew, especially in rapids that require a dozen or more moves over hundreds of yards of continuous turbulence.

For the guide, concentration and dispassionate but full involvement are of prime importance. Some call this a "flow state," an integration of self and environment that comes at moments of peak demand on one's abilities. Helmus describes it as "a strange intensity, like being on stage. You're totally awake, totally there." Confusion and loss of composure are unacceptable here—not

only because they can lead to an accident, but because they erode the absolute confidence that paddlers must have in their captain.

The motor skills of guiding—timing strokes, setting angles to currents, feeling momentum, selecting immediate routes, and instant reaction to emergencies—must be flawless, and are taken for granted in a long or complicated Class V rapid.

What must be added is the ability to look beyond the next ten yards, to choose the safe course amid boulder-strewn, big-drop chaos. This two-level awareness—processing an overall strategy while at the same time giving out dozens of individual paddling commands and evaluating the crew's responses to them—is what it takes to guide most Class V rivers successfully.

The rest of the run holds to this level of intensity, and goes by in a blur of adrenaline. We slam through Miracle Mile, Coffin Rock, and Airplane Turn before reaching two very large Class Vs: Lewis' Leap and Flat Rock Falls. We scout these carefully. At Flat Rock, two guides with safety ropes wait by an eddy to ensure that no raft misses the pull-out and heads for a life-threatening boulder garden of rounded gray granite. Everyone who makes it—and we all do—is rewarded with the eight-foot vertical "Yahoo!" of the falls itself. A tiring portage around Lumsden Falls marks the official end of the run. A mile of slower water leads to the take-out.

This last section is a

fine way to wind down. The late-afternoon sun peeks through the ponderosa and digger pines. The river sparkles with reflections, and the remaining Class IV rapids—Against the Wall, Horseshoe Falls—are run with matter-of-fact relief.

The take-out is a happy scene, as champagne and beer emerge from the old panel truck. Talk is calm—too much

energy has gone into getting down the river. Instead we share a quiet glow of satisfaction from having come through one of the most challenging days of our lives. ■

LARRY ORMAN is executive director of *People for Open Space* and a board member of *Friends of the River*. He co-wrote "Greenbelts and the Well-Planned City" with Judith Kunofsky in the November/December 1985 *Sierra*.

## CHANCES AND CONSEQUENCES

**A** CLASS V river trip is a risky proposition. Even with guides of the highest competence and state-of-the-art gear, how can you safeguard against the tremendous dangers of being dumped into a huge rapid? A split-second miscalculation in giving one command can be enough to cause a flip—and did so on our trip. But a Class V river guide has to make hundreds of such calculations all the way down the river. How can anyone reasonably expect a guide to be capable of holding to the extraordinary level of concentration required to navigate without incident all day on rivers dropping 80 or 100 feet per mile? Or safeguard against a passenger losing balance and falling overboard?

There are no easy answers to the question of safety on Class V rivers. Some say that if you're worried about the possibility of mishap, you shouldn't consider rafting them at all. Because there is still so little experience for would-be passengers to draw on, this may be the only effective response, even if it seems a little harsh.

One thing to consider is that rafts usually have a way of slopping through almost any situation. From personal experience, I've certainly

found that to be true. But it's hard to rely on "usually" when your own safety is at stake.

Some commercial outfitters have begun to screen potential Class V passengers for experience and require them to go through physical tests. There is much to be said for such an approach, even though it can't guarantee levelheadedness in a tight spot.

The problem is that the probabilities and principles of risk that have become so common on intermediate and advanced rivers don't seem to hold as well on the technical (rocky) Class Vs. The exposure on these rivers is of a different order. As a result, the consequences of even a low-probability event are far more likely to be life-endangering. (Where a Class V rating is the result of seasonal high water, similar factors come into play.)

It's an unresolved problem, one that will likely need intensive work by commercial companies, equivalent to the work that goes into the exploration and marketing of Class V trips. For the risks are real, and much responsibility for making a decision about whether to participate in such a trip should rest with the potential passenger—provided the company has adequately

disclosed the level of risk.

If you're thinking of going on a Class V, you might want to ask yourself a few questions first. Am I physically fit—*really* fit? Can I run two or more miles with ease? Can I keep up a pace of work akin to lifting heavy boxes for much of the day? How do I react to confrontations and sudden changes—do I freeze, or do I quickly unwind and respond by doing what has to be done?

Finally, look at your experience. If you've paddled at least two rivers with substantial numbers of Class IV and one or more Class V rapids and can answer yes to the other questions, you might want to think seriously about going on a Class V river trip as a crew member of a paddle or other type of raft.

You'll feel an incredible sense of accomplishment by the end of your trip. It's likely you'll go through some spectacular river canyons, places only a few people ever get to visit. (But be warned: You may not have a lot of time to look around!) The skills you've gained on other rivers will be improved by the demands you'll face, and most likely you will go with extraordinarily competent guides. You will learn what full commitment to whitewater is—and treasure it. —L.O.

## A Water Empire in Decline

*Rivers of Empire: Water, Aridity, and the Growth of the American West*

by Donald Worster

Pantheon, 1985. \$24.95, cloth.

Larry Anderson

**“W**E ENJOY pushing rivers around,” a brash water engineer told a *Time* reporter as the magazine celebrated the

burgeoning network of dams and canals spreading across the American West in the early 1950s. That engineer's proud boast, at least in the eyes of environmental historian Donald Worster, epitomized the nation's approach to the development of the drylands west of the hundredth meridian.

The American doctrine of manifest destiny, perpetual economic growth, and unbridled *laissez faire* capitalism faced a challenge in the arid West—the challenge of scarcity. Without abundant and dependable supplies of one essential resource—water—the momentum of the national mission could not be maintained. Paradoxically, the development of the region's water supply depended on extensive federal economic assistance, technical expertise, and bureaucratic control. Despite the nation's rhetoric of individualism and the free market, the American West as depicted in native son Worster's impassioned book has become “a land of authority and restraint, of class and exploitation, and ultimately of imperial power.”

The author bases his analysis of the region's recent history partly on the controversial theories of Karl Wittfogel, who maintained that in arid regions of the ancient world where large, disciplined labor forces were required to construct dams and irrigation works (such as Egypt, China, India, and Mesopotamia), rigidly hierarchical “hydraulic” societies developed. Worster sees sinister parallels in the American West, where technological control of water

has evolved in tandem with ecological and social transformation of the region.

Beginning in the mid-19th century, Mormons and other small-scale communal and commercial enterprises made the first attempts to impound and divert water for irrigation. But such initiatives soon reached their financial, legal, and technical limits. By the end of the century, politicians, land speculators, farmers, and engineers began looking to Washington for assistance.

A new era opened in 1902 with the passage of the National Reclamation Act, “the most important single piece of legislation in the history of the American West, overshadowing even the Homestead Act in the consequences it has had for the region's life.” Ostensibly designed to create opportunities for small farmers, the legislation failed almost completely, by Worster's account, in fulfilling its original intentions.

By the 1930s, with the construction of such massive projects as Hoover Dam on the Colorado River, the U.S. Bureau of Reclamation had established itself as an agency eager to expand its power and influence. By the 1940s all the elements of the new “water empire” were in place. According to Worster, “The two forces of government and private wealth achieved a powerful alliance, bringing every major western river under their unified control and perfecting a hydraulic society without peer in history.”

**S**ome of the ecological consequences of that program of “total control, total management, total power” are now apparent. Worster takes a certain grim delight in recounting such problems as collapsing dams, reservoir sedimentation, salinization, pollution, and aquifer depletion. These difficulties, in his estimation, are harbingers of the water empire's inevitable decline.

The apotheosis of the imperial water regime has been achieved in California, especially in the Central Valley. Large farmers there organized themselves into powerful irrigation districts and pro-

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ducer cooperatives, abetted in their ambitions by the Bureau of Reclamation's extensive Central Valley Project, which provided both irrigation and electricity, and by the agency's failure to enforce the original 160-acre-per-person limit on farm size established by the 1902 Reclamation Act.

Moreover, what the author calls the "most cohesive economic class yet seen in American agriculture" secured its position and wealth primarily at the expense of generations of farm workers—including Native Americans, Chinese, Japanese, "Okies," Filipinos, Hindustanis, and especially Mexicans, "the persistent presence, the dominated class, the despised race, the men and women who made the water empire a success."

To some readers this combative book may seem nothing more than an ideological diatribe. Others will find Worster's alternative vision of the region's future appealing, if utopian and unlikely. Recalling John Wesley Powell's "blueprint for a dryland democracy," the author pictures the West redesigned "as a network of more or less discrete, self-

contained watershed settlements" adapting their development to local ecological constraints and economic needs.

Worster recognizes that this vision of self-sufficiency and democracy would require nothing less than a widespread cultural and spiritual transfiguration. He urges Westerners—indeed all Americans—to reacquire themselves with the region's landscape, to take a lesson from the land, as did Native Americans over the millennia, writers such as Mary Austin and John Van Dyke, and reformers like Powell. "Democracy cannot survive where technical expertise, accumulated capital, or their combination is allowed to take command," he warns. The future need not be—cannot be—simply a projection of past rationalizations, policies, and techniques; rather, it "will require our learning to think like a river, our trying to become river-adaptive people"—not a people who enjoy pushing rivers around.

LARRY ANDERSON reviewed *Anne Burford's Are You Tough Enough?* in the May/June Sierra.

## Controlling the New Genetics

*Altered Harvest: Agriculture, Genetics, and the Fate of the World's Food Supply*

by Jack Doyle

Viking, 1985; \$25, cloth.

Bruce Colman

THERE IS NOTHING especially new about moving genetic material from one plant or animal to another in order to make a different plant or animal down the line. People have been doing it for as long as there have been stockbreeders—as long, in fact, as farmers have been selecting certain seeds to grow or trying to boost their cattle's milk production, their sheep's ability to grow wool, or their pack animals' ability to carry loads across deserts or mountains. Barely an item remains in the modern agricultural inventory that is not the result of genetic manipulation.

What is new is how greatly plants and animals can be changed, and the speed at

which genetic manipulation can take place. Jack Doyle, director of the Environmental Policy Center's Agricultural Resources Project and author of *Altered Harvest*, uses the phrase "astronomical speed." New techniques for gene splicing, microinjection of genetic material into cells, embryo engineering, and the like are allowing scientists and technicians to do all sorts of wondrous things: create wheat plants that repel rust and fertilize themselves, cover fruit trees with a bacterium that prevents water from freezing at 32° Fahrenheit, and ship entire herds of dairy cows in a briefcase, in the form of frozen embryos.

All this has made people very nervous. Their fear of genetic engineering (or bioengineering, or gene splicing) is a fear of contamination—the possibility that some genetically altered something will get loose and, like Frankenstein's monster, wreak havoc.

*Altered Harvest* doesn't allay such fears, but the author does feel we should



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be concerned with the fundamental questions of who is doing genetic research, to what ends, and with what controls. He is not worried about mad scientists; he recounts interviews with a number of people in the genetics business whom he finds well intentioned. Rather, he is sounding the alarm about the role of money in the enterprise. The agrigenetics business (the branch of biotechnology that deals directly with agriculture), nonexistent 15 years ago, is expected to grow into a \$50-billion (some say \$100-billion) industry by the end of the century, and a handful of corporations are controlling it.

Certain company names keep popping up throughout *Altered Harvest*: DeKalb, Cargill, Ciba-Geigy, Sandoz, Upjohn, Monsanto, Royal Dutch-Shell, Hoffman-La Roche, Dow Chemical, Calgene, and DuPont among them. These are pharmaceutical companies, chemical companies, and agribusiness suppliers. In recent years they've been buying up genetic patents and registering their own, starting biotechnology labs, purchasing biotech companies, and funding university research. One of the strengths of Doyle's book is a 97-entry appendix of agricultural subsidiaries, biotechnology ventures, and genetic research projects that lists which companies own or fund them.

The author demonstrates how these corporations interfere with traditional scientific practices by controlling how and when their geneticists may publish results and exchange information with colleagues. They are getting an armlock on the traditional, regionally based seed business—even the part of the business that caters to hobbyists—in order to control competition and ensure distribution of their own products. And they are attempting to capitalize on time-honored relationships between rural businesses (now corporate subsidiaries) and legislators. Finally, Doyle suggests that the growth of agrigenetics may make major food crops vulnerable to a catastrophe similar to the one that nearly wiped out American corn.

By 1969, before the advent of recent high-tech genetic-exchange methods, most varieties of American corn were hybrids vulnerable (because of their breeding) to southern corn leaf blight.



The blight came along in 1970 and '71 and nearly destroyed the entire crop. Doyle suggests that this could happen again as food plants are made more different from their wild relatives and more dependent on artificial inputs, though he makes no predictions about the crop most likely to fail. Still, the reader is given pause by his observation that 72 percent of all acreage planted to the potato grows just four closely related varieties. Even if the lowly, ubiquitous tuber is not the next victim of decimation by plague, such figures give evidence of how thoroughly corporate money can smooth away regional differences among agricultural crops.

It's true that the new techniques of genetic manipulation could aid in the transition to a sustainable, chemical-free agriculture. But the likelihood is that they will not. The companies that control these technologies already provide the chemical and financial inputs to which contemporary farming is addicted. Doyle argues that these companies probably wouldn't substitute one product for another unless the newer one were more profitable.

Moreover, the huge sums of money involved in agrigenetics tend to create pressures and interests directly opposed to the interests of the natural environment in which farming takes place. Money likes things simple; environments tend to move toward complexity. Monocultures of crops and farming techniques make easier profits for corporations than do the diverse farms that form the basis of an agriculture best able to preserve soils, small farms, and rural communities. Corporate farming loves huge yields, and one of the new biology's big promises is record yields to feed the world's hungry; but as Wendell Berry has noted, record yields have been poison to the American farmer.

What is needed is an approach to farming that brings the farmer into intimate contact with the land rather than the bank, an approach that starts with knowing what each piece of ground can and should grow. American farming should make the farmer independent; yet the agrigenetic system Doyle warns us about is likely to make farmers increasingly dependent on sources of credit, seed, fuel, and ma-

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chinery even more distant from the earth than they are now.

Careful and useful as it is, *Altered Harvest* doesn't go far enough. The new genetics is one of those fields where there's not yet a proven case for impending disaster, although there is ample cause for concern. It's too bad the author's warnings are all speculative—this or that "may" happen, such-and-such "raises disturbing questions"—and that his remedies are only recommendations for more citizen commissions and legislative hearings.

Then again, maybe he's just being realistic: The behemoth has so much momentum, we can only hope to keep it from squashing everything in its path.

**BRUCE COLMAN**, co-editor of *Meeting the Expectations of the Land* (North Point, 1985), lives in Berkeley, Calif.

## Advocate for America's Parks

*The Birth of the National Park Service: The Founding Years, 1913-33*

by Horace Albright, told to Robert Calm; Howe Brothers (P.O. Box 6394, Salt Lake City, UT 84106), 1985; \$19.95, cloth.

**Michael McCloskey**

**B**EING AT THE right place at the right time often depends on luck—something Horace Albright had, along with talents possessed by too few. In 1916, only a couple of years out of college, he found himself in Washington, D.C., in the thick of the effort to form the National Park Service. After three years in the Secretary of the Interior's office he was already a master of the legislative process, and had brought the contending parties together to agree on the Organic Act establishing the National Park Service. By the age of 27, he was the agency's acting director.

Albright's youthful role in the creation of the Park Service is well known, but the cumulative impact of his work in the agency over a 20-year period can only now be fully appreciated. With the publication of this as-told-to autobiography, Albright emerges as the domi-

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**Second Nature**

Edited by Richard Mabey  
with Susan Clifford and Angela King  
Jonathan Cape/Merrimack Publishers  
Circle, 1984. \$22.95, cloth.

**S**econd Nature presents perspectives on the natural world from 42 of Britain's most notable artists and writers, among them Fay Weldon, David Hockney, John Fowles, and John Berger. Conrad Atkinson, whose *Plutonium Landscape* is reproduced here, creates visual works based on such themes as the nuclear-arms industry, disease, hunger, and the victims of Thalidomide.



nant force in organizing the National Park Service.

Albright had a symbiotic relationship with Steven Mather, the agency's first director, who had the original vision and built a public constituency for the parks. But it was Albright who knew how to make Mather's dreams come true. He built the organization, first as an intermittent acting director and later as director. More than any other person, Albright knew how to make friends for the service in Washington. He had an instinctive understanding of the political process, and over the years cultivated every important figure he could reach: senators, representatives, cabinet secretaries, the press, philanthropists, and eventually presidents. His cultivation paid off as scores of new areas were added to the system.

By the mid-1920s it was becoming clear that Albright had visions of his


own. When he first went to Washington, he had never even been in a national park; his only exposure to conservation had been when the Sierra Club's Will Colby introduced him to John Muir. But by the 1920s Albright had visited park after park, and he knew the backcountry of Yellowstone as few others did. It was Albright who conceived the idea of establishing Grand Teton National Park and extending Yellowstone southward; he then battled for 30 years to make this dream come true. And it was his idea to bring the national monuments, historic sites, and battlefields then being administered by other agencies into the National Park System, as a way to build a constituency for the Park Service throughout the nation.

Through all these years Albright constantly pushed for expansion of the system, playing a key role in the addition of Kings Canyon, Grand Canyon, Olym-

pic, Acadia, Everglades, Zion, and Isle Royale parks. He was instrumental in the expansion of Yellowstone to the east (in the 1920s), Yosemite to the west, and Sequoia in various directions. Stubbornly resisting incursions into the parks by commercial interests, Albright fought World War I proposals to allow logging, mining, and grazing in the national parks, and he threatened to resign over proposals to build dams in Yellowstone. He got President Wilson to say he would veto the Federal Water Power Act if the national parks were not removed from the bill, and he killed proposals to build a tramway to Glacier Point in Yosemite. Finally, Albright championed wilderness in the media, defending Yellowstone against more roads and promoting wilderness values in a 1928 *Saturday Evening Post* article. When he left the Park Service in 1933, he enjoined his successors to "oppose with all your

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strength and power all proposals to penetrate your wilderness regions with motorways and other symbols of modern mechanization."

These colorful stories emerge as Albright recalls in detail events that occurred 60 to 70 years ago. Some of these details have been overlooked in other works on Albright—such as Donald Swain's *Wilderness Defender*—and here one gets a feeling for the time, place, and context of these historic events. Moreover, it is now clear that it was in fact Albright, not Mather, who pulled together Interior Secretary Lane's seminal 1918 guideline letter, which outlined conservation-oriented management policies still pursued today.

This eminently readable history of Albright's years with the National Park Service was developed by Robert Cahn from interviews taped over a ten-year period. Cahn, who won a Pulitzer Prize in 1969 for his *Christian Science Monitor* series on the national parks, has been able to dig more deeply into Albright's history than others, and his book succeeds in securing the man's place as a founding figure of the Park Service. In recognition of his legacy, the Sierra Club conferred its highest honor, the John Muir Award, on 96-year-old Horace Albright this May.

MICHAEL McCLOSKEY is Chairman of the Sierra Club.

## Guides in Hand, Albion My Way

Robert A. Frauenglas

**H**IKING IN THE British Isles seems to hold a special appeal for Americans. Regional accents on both sides notwithstanding, there is no language barrier to make communication difficult, and the islands contain an incredibly varied landscape within a relatively small area.

Being a long-distance hiker, I consider pre-walk planning to be very important. While there's a vast number of touristy books about Britain on the market, almost all of them are useless when it comes to information about hiking. But don't despair: A good many titles devoted to walking in Britain are available to those who will take time to search them out.

*On Foot Through Britain: A Trail Guide to the British Isles* by Craig Evans (Quill, 1982; \$10.50) is a nearly encyclopedic resource. The author, a former executive director of the American Hiking Society, provides descriptions of regional and national footpaths, explanations of the relevant legalisms pertaining to rights-of-way, and a comprehensive list of sources for maps and other navigational aids. Not a trail guide in the conventional sense—route descriptions are intentionally brief, and no maps are reproduced—*On Foot Through Britain* is the book you'll want to consult when you first sit down to plan your trip.

Most of Michael Marriott's *The Footpaths of Britain: A Guide to Walking in England, Scotland, and Wales* (Salem House, distributed by Merrimack Publishers Circle, 1984; \$12.95) is devoted to descriptions of many of Britain's best-known long-distance footpaths, as well as a number of shorter ones. Marriott grades each walk for difficulty; having hiked many hundreds of miles throughout the British Isles, I find his grading system quite accurate.

If you're an expert map reader, you'll want to consult Marriott's book for the British Ordnance Survey map or maps appropriate to each walk. These are some of the finest maps in the world; I read them as if they were books because they contain so much information. Good map shops in the United States and Great Britain will carry these, or they may be ordered directly from Ordnance Survey, Romsey Road, Maybush, Southampton, SO9 4DH England.

*Woodland Walks in Britain* by Gerald Wilkinson (Holt, Rinehart and Winston, 1985; \$19.95) uses British Ordnance Survey maps to illustrate its descriptions of some 400 wooded walks suitable for all ages and inclinations—from strolls through the gardens of venerable manor houses to challenging uphill treks. Wilkinson's expert eye (he's the author of *The History of British Trees*, among other titles) allows him to provide a

running commentary for each sojourn.

The British Ordnance Survey and the British Automobile Association have joined with the British Tourist Authority to publish a series of guides that walkers and drivers alike will put to good use. The three books I read from the "Ordnance Survey/Leisure Guide" series—*Lake District*, *Yorkshire Dales*, and *New Forest*—are profusely illustrated oversized paperbacks; they cost \$15.95 each and are distributed in the United States by Merrimack Publishers Circle. Each book includes at least 15 walks keyed to the relevant Ordnance Survey map details (at a scale of 1:25,000) reproduced opposite each walk description. The walks take from 30 minutes to a full day to complete.

One of the most prodigious writers of books on walking in Britain is John N. Merrill, the originator of a number of magnificent long-distance footpaths. Many of his titles (*From Arran to Orkney*, *Walking in South Derbyshire*, *Emerald Coast Walk*, and *The Rivers' Way*, to

name just a few) are available from J.N.M. Publications (Winster, Matlock, Derbyshire, DE4 2DQ England). *Walking My Way*, a collection of Merrill's writings published by Chatto & Windus/The Hogarth Press (1984, \$15.95), is distributed in the U.S. by—surprise!—Merrimack Publishers Circle.

Finally, a few notes for the meticulous trip planner: The Ramblers Association (1/5 Wandsworth Rd., London SW8 2LJ) provides general information about walking in Britain; contacting the organization well before your departure date will do wonders for your planning and your peace of mind. And two useful magazines that cover British hiking are *Footloose* (26 Commercial Buildings, Dunston, Tyne & Wear, NE11 9AA England) and *The Great Outdoors* (Ravensett House, 302/304 St. Vincent St., Glasgow, G2 5NL Scotland).

ROBERT A. FRAUENGLAS has contributed articles to *Adventure Travel and Trailwalker in the United States and Backpack, Footloose, and Outposts in Great Britain*.

#### BRIEFLY NOTED

Publication of *The Guide and Index to the Microform Edition of the John Muir Papers, 1858-1957* is a boon to scholars. The first complete indexing of some 16,000 items of Muiriana—including correspondence, journals and sketchbooks, drawings, photos, and memorabilia—was coordinated by the University of the Pacific, whose Holt-Atherton Center for Western Studies is a major repository for Muir's letters and manuscripts. The index is available for \$25 plus shipping and handling from Chadwyck-Healey, Inc. (1021 Prince St., Alexandria, VA 22314). . . . If Larry Orman's run down the Upper Tuolumne (described in this issue) inspires you to take on one of California's wild rivers, you'll find valuable information to help plan your trip in *The Complete Guide to Whitewater Rafting Tours: 1986 California Edition*, by Rena K. Margulis (Aquatic Adventure Publications, P.O. Box 60494, Palo Alto, CA 94306; \$11.95, paper). This consumer guide provides detailed river descriptions plus comprehensive outfitter data. . . . Readers who missed Dennis Collo's fine piece on bicycle touring in our July/August 1985 issue can learn about

the topic from Dennis himself—on video. The 80-minute "L. L. Bean Guide to Bicycle Touring"—one of four tapes in the L. L. Bean Outdoor Video Library—is available for purchase or rental through the company's mail-order catalog (Freeport, ME 04033). . . . Jeff Rennie's beautifully illustrated *The Rivers of Colorado* is the first volume in the new "Colorado Geographic" series published by Falcon Press (P.O. Box 279, Billings, MT 59103; \$22.95 cloth, \$14.95 paper + \$1.50 postage). . . . Interested in a career as a wildlife biologist, soil conservationist, or mountaineering guide? How about working as a rodeo rider, yacht captain, or (ugh) fur trapper? These diverse occupations are among some 50 jobs profiled in *The Outdoor Careers Guide* by Gene R. Hawes and Douglass L. Brownstone (Facts on File, \$8.95), "the sure-fire guide to getting the greatest jobs under the sun." . . . Retired Air Force Colonel Robert Bowman takes a well-considered swipe at the administration's SDI proposal in *Star Wars: A Defense Insider's Case Against the Strategic Defense Initiative* (J. P. Tarcher, \$14.95 cloth, \$7.95 paper).

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# FOREIGN OUTINGS



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## Africa

### [87890] Kenya Wildlife Walking Safari, Africa—February 1–20.

Leader, Emily Benner, 155 Tamalpais Rd., Berkeley, CA 94708. Cost: \$2,565. Come explore Kenya by foot, camel, Land Rover, and dhow. With Kiliman-

jaro as a backdrop, we will game-drive through Amboseli National Park, then walk for five days down the Tsavo River viewing hippo, crocodile, elephant, and the many birds of the African bush. Camels will join us for our trek into the rugged semi-desert landscape of Tsavo East. Our last week will

be spent relaxing and exploring the sand dunes, coral reefs, and Arab-African cultures along the coast of the Indian Ocean.

[87950] African Wildlife Safari: Northern Tanzania—June 26–July 10. Leader, Mary O'Connor, 2504 Webster

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	Individual	Joint		SPECIAL CATEGORIES	
				Individual	Joint
Regular	<input type="checkbox"/> \$ 29	<input type="checkbox"/> \$ 37	Senior	<input type="checkbox"/> \$15	<input type="checkbox"/> \$23
Supporting	<input type="checkbox"/> \$ 50	<input type="checkbox"/> \$ 58	Student	<input type="checkbox"/> \$15	<input type="checkbox"/> \$23
Contributing	<input type="checkbox"/> \$100	<input type="checkbox"/> \$108	Spouse of Life		
Life	<input type="checkbox"/> \$750	per person	Member (Annual Dues)	<input type="checkbox"/> \$15	

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**Sierra Club** Dept. J-176, P.O. Box 7959, San Francisco, CA 94120

Residents of Canada, please remit in Canadian funds to:  
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				Individual	Joint
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*St., Palo Alto, CA 94301. Cost: \$2,430.* Northern Tanzania represents the best of Africa's wildlife areas. Our safari includes camping on the limitless expanse of the Serengeti, where vast herds roam, and in Ngorongoro Crater, which has the world's largest concentration of game. Lake Manyara is famous for its elephant herds and tree-climbing lions. Traveling by Land Rover, we'll also visit Olduvai Gorge, site of the Leakeys' fossil discoveries. Included is a flight to Lake Victoria to enjoy a new and little-visited national park on Rubondo Island. Come visit some of the finest, least-spoiled places left on Earth.

**[87970] Kenya Expedition Adventure—On Horseback, On Foot, and By Land Rover, Africa—July 13–August 2.** *Leader, Lynn Dyche, 2747 Kring Dr., San Jose, CA 95125. Cost: \$3,030.* This trip is for those who wish to experience Kenya on a more active and involved level. We will begin this exciting and diverse expedition on horseback, followed by game drives in Land Rovers, and concluding with a camel-assisted walking safari. We will have the opportunity to view large concentrations of game animals. This trip is scheduled to coincide with the migration of great herds of animals. We will also visit many native peoples in their villages and in the countryside. Nights will be spent in comfortable camps set up by our camp staff. We will travel 15 to 20 miles a day on good saddle animals that are accustomed to cross-country treks and wild animals. Trip members should be in good physical condition for riding and walking through wild country. You need not be a long-established equestrian, but you should be familiar with and comfortable around horses. Leader approval required.

**[87990] Victoria Falls and the National Parks of Zimbabwe, Africa—September 6–18.** *Leader, Pete Nelson, 5906 Dirac St., San Diego, CA 92122. Cost: \$2,810.* This outing visits the best of Zimbabwe's national parks: Mana Pools, Matusadona, and Hwange as well as Victoria Falls. There will be wildlife-watching from blinds, on Land

Rover outings, and on optional walks (with an armed ranger). The end of the dry season allows good wildlife viewing when grass has been grazed short. We stay at comfortable camps, two of them overlooking waterholes. Moving between parks by air, we avoid long drives on bad roads. Our last day is at beautiful Victoria Falls.

## Asia

**[87865] Annapurna Christmas, Nepal—December 20, 1986–January 3, 1987.** *Leader, Peter Owens, 117 E. Santa Inez, San Mateo, CA 94401. Cost: \$785.* Come spend the Christmas holidays on this culturally oriented trip to the Gurung villages of the Annapurna range. Great views of these 25,000-foot giants are on the itinerary, and you will make many new friends from our local staff. The highest camp on this moderate economy trek will be about 11,000 feet. Leader approval required.

**[87910] Annapurna Sanctuary and Jungle Safari, Nepal—March 21–April 11.** *Leader, John Garcia, 124 Romero Circle, Alamo, CA 94507. Cost: To Be Announced.* The trip will begin in Kathmandu, and a short distance away we will begin our trek to the Annapurna Sanctuary. Upon entering the sanctuary, we will be surrounded by towering peaks ranging in elevation from 20,000 to 26,545 feet. The trail takes us through Dhampus, Ghandrung, and Chomrong, the interesting villages of the Gurungs. We will climb to two base camps, Mt. Annapurna and Mt. Machhapuchhare (Fish Tail) at an elevation of about 14,000 feet. After the trek, we will stay three days and two nights at Chitwan National Park, where we hope to see tigers in their natural habitat.

**[87915] A Hiker's View of China—April 16–May 5.** *Leader, Bud Bollock, 1906 Edgewood Dr., Palo Alto, CA 94303. Cost: \$2,715.* This exciting, never-before-offered hiking trip takes us through rural eastern China, highlighted by exploration of Beijing, Shanghai, and other cultural and historic centers. Experience a commune, exotic temples, a Grand Canal trip, and

overnight ascents of Tai Shan (5,000') and Lotus Flower Peak (6,000') in the Huang Shan (Yellow Mountains). Transportation will be by plane, train, and bus as well as on foot. We will stay in the best available hotels or guesthouses. Leader approval required.

**[87920] Kangchenjunga, Nepal—"The Five Treasuries of the Great Snow"—April 20–May 24.** *Leader, Peter Owens, 117 E. Santa Inez, San Mateo, CA 94401. Cost: \$1,355.* Kangchenjunga resembles a frozen jewel gleaming in cold, bright light. At 28,200 feet, the third highest peak in the world saddles the Nepal/Sikkim border like a tortured jumble of rock and ice. Inaccessible to foreigners for many years, today the remote, little-traveled Kangchenjunga Massif offers some of the finest trekking in all of Nepal. To attain our objective—the western flank—we negotiate a route through rugged canyons knifed by turbulent rivers, steep ridges, and high, lonely yak pastures. This will be an easy-paced, moderate trek, with porters carrying dunnage. There will be ample time to photograph the mountains, the rhododendron forests, and the people who live there. We mingle with the local inhabitants in little tea houses, and on layover days enjoy optional nontechnical climbs, side hikes, or snoozing. Leader approval required.



**[87965] Swat-Hunza-Kashgar Trek, Pakistan and China—July 12–August 10.** *Leader, Bud Bollock, 1906 Edgewood Dr., Palo Alto, CA 94303. Cost: \$2,755.* Entry into this rare and exciting realm of alpine vistas and high mountain passes starts with a ten-day trek through the ancient kingdom of Swat. We then jeep westward through Gilgit into fabled Hunza, populated by centenarians who dwell among the Karakorams, "an ultimate manifestation of mountain grandeur." Here we include a five-day exploration of the mighty Batura Glacier followed by a crossing into China's Xinjiang Province over Khunjerab Pass (15,600').

experience the amazing diversity of Nepal's culture, climate, and scenery. The Jugal Himal is nestled on the Tibetan border and dominated by Dorje Lhakpa (23,000'). En route we will visit the holy lake of Gosain Kund and the Sherpa settlements of Helambu. Maximum elevation will be 15,000 feet. Leader approval required.

**[88515] Gorkha Christmas Trek, Nepal—December 19, 1987–January 2, 1988.** *Leader, Peter Owens, 117 E. Santa Inez, San Mateo, CA 94401. Cost: To Be Announced.* Come spend the Christmas holidays on our annual culturally oriented Nepal trek to the vil-

lages near Himalchuli and Bauda peaks. This moderate trek of 12 days will have a high camp of about 11,000 feet. Great views and many new Nepali friends await you. Leader approval required.

Photo by Bruce



In Kashgar, a silk trade outpost, we will mingle in an exotic Sunday bazaar. Leader approval required.

**[88505] Langtang Trek, Nepal—October 22–November 14.** *Leader, Bob Madsen, 3950 Fernwood Way, Pleasanton, CA 94566. Cost \$1,155.* Come hike and explore the Langtang and Trisula kholas in Langtang National Park. Above Kyangjin you will have a chance to view the fluted peaks of Jugal Himal near the Tibetan border. The trek will pass through rhododendron forests, glaciated river valleys, and villages. The highest camp will be at about 12,500 feet. Leader approval required.

**[88510] Jugal Himal Trek, Nepal—November 21–December 12.** *Leader, John DeCock, 53 Landers St., Apt. 2, San Francisco, CA 94114. Cost: \$1,175.* This moderate trek offers an opportunity to

**[88520] South China Hike, Hong Kong—December 20, 1987–January 2, 1988.** *Leader, Phil Gowing, 2730 Mabury Sq., San Jose, CA 95133. Cost: \$1,260.* There is a Hong Kong rarely seen by Westerners. We will hike the Lantau Trail on Lantau Island, the MacLehose Trail in the New Territories, and the scenic and rugged countryside surrounding the Shenzhen Special Economic Zone on mainland China. The dramatic and spectacular coastline and beaches of the South China Sea will constantly be in sight. We will spend our evenings in youth hostels, guesthouses, and monasteries, where we will enjoy meals of ethnic Chinese, conti-

## Europe

**[87880] Cross-Country Skiing in the Austrian Alps—January 24–February 8.** *Leader, Carol Dienger, 3145 Bandera Dr., Palo Alto, CA 94304. Cost: \$1,450.* Experience this world-famous winter wonderland, the Austrian Alps, on a 15-day cross-country ski adventure. This trip is planned for both novice and experienced skiers; cross-country ski instruction and practice tours will be provided for all skill levels. Time will be set aside to allow opportunities for shopping as well as for enjoying some of Austria's scenic, historic, and musical attractions. Altmarmarkt in Pongau (Salzburg province) and Oberau in the high valley of Wildschönau (Tirol province) will be our skiing centers. Two days in Salzburg during Mozart Week are included. Accommodations will be in comfortable hotels. The trip price includes equipment rental and ski instruction.

**[87895] Ski Touring in Norway—February 24–March 13.** *Leader, Bob Paul, 13017 Camino Mar Villa, Del Mar, CA 92014. Cost: \$2,055.* This trip offers ski touring for novice and/or expert skiers in the land where Nordic skiing began. We will stay overnight in rustic lodges and subsist on hearty Norske food while day touring in Norway's majestic mountains. Starting in Oslo, we will ski in Nordmarka, Rondane National Park, the Jutunheimen Mountains, and on the Hardanger Plateau, ending our trip in the picturesque port city of Bergen. Leader approval required.

**[87925] Moorland, Wolds, and Coastal Path Walking, England—May 9–23.** *Leader, Dick Terwilliger, 7339 Pinecastle Rd., Falls Church, VA 22043. Cost: \$1,290.* While staying in a different guesthouse for each of two weeks, we will dayhike in two of England's most interesting walking regions. Our first week's hiking, based in Scar-

borough on Yorkshire's North Sea coast, will take us through a quiet, isolated, and lovely world with its ever-changing scenery: the rolling chalk hills of the Yorkshire Wolds, steep-sided valleys, pleasant woodlands, and peaceful, charming villages. Based in Swanage in the south of England for our second week, we will take daily hikes through an area of outstanding natural beauty, and along breathtaking coastal cliffs.

**[87930] North of England Walking Tour—May 27–June 12.** *Leader, Robin Brooks, 920 Kennedy Dr., Capitola, CA 95010. Cost: To Be Announced.* June is the best month to visit the three major national parks that lie a few hours apart across the North of England. Starting from historic York, we will walk the moors, valleys, and rugged North Sea coast of the North York Moors National Park. Then we explore Herriot's Yorkshire Dales National Park, including the scenic Pennine Way. Our trip climaxes in the Lake District, England's largest park, made famous by poets, painters, and hikers. While we emphasize hiking, we will also find time to visit cathedrals, castles and great houses, museums, gardens, and nature sanctuaries. A historic inn will serve as our center in each park.

**[87940] Highlands and Islands of Scotland—June 10–July 6.** *Leaders, Mildred and Tony Look, 411 Los Ninos Way, Los Altos, CA 94022. Cost: \$2,510.* The Scottish Highlands captivate visitors with early summer blooms of rhododendrons and azaleas, rugged mountains like the Torridons and Cairngorms, and lochs made famous in literature. Our meeting point will be Edinburgh, where we will visit the Royal Botanical Gardens and the 200-year-old New Town. Two van-buses will take us to mountain areas of the western and northern Highlands and the islands of Skye, Harris, and Lewis in the company of a Scottish naturalist. Walking, hiking, photography, and nature study can be as moderate or strenuous as you desire.

**[87945] The South of France—Biking Provence—June 16–28.** *Leaders, Lynne Simpson and Richard Weiss, 1300*

*Carter Rd., Sacramento, CA 95864. Cost: To Be Announced.* Imagine yourself experiencing a close view—via bicycle—of one of France's most beautiful and interesting areas, Provence. Think of sunny days, good exercise, and a chance to enjoy the unique qualities of each village. We will begin and end this trip in Aix-en-Provence. Bicycles will be provided, and nights will be spent in small, often family-run hotels and inns. Come delight in *la vie provençale!*

**[87955] Unspoiled France—The Massif Central—July 2–15.** *Leader, John Doering, 6435 Freedom Blvd., Aptos, CA 95003. Cost: \$1,705.* This little-known part of France has 500 chateaux, lush green fields, numerous volcanos (one higher than Vesuvius), blue lakes, gorgeous flowers, pine forests, granite crags, and fantastic gorges and rivers. We will hike from Clermont-Ferrand through the Parc Naturel des Volcans d'Auvergne to the source of the Loire. We will explore the Monts du Cantal, Doré, and Dômes. A van will take us through the Gorges du Tarn and the Vallée de l'Auvergne. We will sample wines and cheeses, visit Romanesque churches and medieval villages, and view wildflowers in this romantic part of France, famous for its thermal baths.

**[87960] Bike and Hike in Ireland—July 7–20.** *Leader, Len Lewis, 2106A Clinton Ave., Alameda, CA 94501. Cost: \$1,250.* Come away to the wild and scenic western part of Ireland for two weeks of leisurely to moderate biking and hiking. Our route will take us over the highways and byways, through the bogs and burrens, from the mountains

Linda Orsoly



to the seashore, and through counties Clare, Galway, Mayo, Sligo, and Donegal. We will stay in bed-and-breakfast establishments and feast on the best of Ireland. We will visit castles, keeps, and ruins, setting a pace that will allow us to enjoy it all.

**[87975] Hut-Hopping in the Dolomites, Italy—July 16–29.** *Leader, Fred Gooding, 8915 Montgomery Ave., N. Chevy Chase, MD 20815. Cost: To Be Announced.* We will spend a week in each of two of the most spectacular ranges of the Dolomites, the Brenta and Lavaredo groups. The excellent trails and huts maintained by the Club Alpino Italiano will enable us to understand why the area is so popular among alpine trekkers. We will travel as the Europeans do, carrying only our personal belongings on our backs. We'll have a break in hotels between the two hiking segments as well as a trip over the Dolomites Highway to Cortina d'Ampezzo and the Lavaredo group.

**[87980] Switzerland—The Appenzell—July 20–31.** *Leader, Ray Simpson, 1300 Carter Rd., Sacramento, CA 95864. Cost: To Be Announced.* Join this trip to eastern Switzerland—the heartland of Europe—and hike in the Appenzell. Enjoy the rolling green meadows, the crystal-clear streams, and the picturesque hamlets. Day walks from village to village will be on well-worn paths through high valleys surrounded by snowcapped peaks. Overnights will be in guesthouses and small family-run hotels, where we will meet local inhabitants and sample delicious local specialties.

**[87985] Hiking in the Rondane Mountains, Norway—August 4–14.** *Leader, Bert Gibbs, P.O. Box 1076, Jackson, CA 95642. Cost: To Be Announced.* From Oslo our trip takes us by bus to the town of Hjerking. Here our hike begins, traveling from one staffed hut to the next, except the sixth night, when we will prepare our meals at a self-service hut. We will hike three to five hours each day over moderately easy terrain at about 5,000 feet. Along the way we will enjoy the marvelous scenery of the Rondane Mountains, in-

cluding part of Rondane National Park. The cost of the trip includes the round-trip bus fare from Oslo, meals, lodging, an English-speaking guide, and membership in Den Norske Turistforening. This beautiful country promises to offer a hike that you'll always remember.

**[87997] Montafon Valley and the Stubai Alps, Austria—September 17–29.**

*Leader, Walt Goggin, 18836 Lenoss Ct., Castro Valley, CA 94546. Cost: \$1,690.* Come sample two varieties of the alpine experience. During our first week of this two-part trip we will be dayhiking in the mountains around the Montafon Valley of western Austria. Nights will be spent in a small but *gemütlich* mountain hotel in the town of Schruns. Views are long and spectacular, but the walking will be relatively undemanding. After overnighting in Innsbruck, we move south to encounter the sterner challenges and splendors of the Stubai Alps. We will travel from hut to hut carrying our necessities on our backs, relying on the huts for meals and spartan lodgings. The September trip date suggests (but cannot guarantee) settled weather and reduced visitation.

**[88500] Touring the Mosel Valley, Germany—September 27–October 10.**

*Leader, Lynne McClellan Loots, P.O. Box 5542, Cary, NC 27511. Cost: \$1,925.* Bicycling among the forests, vineyards, and farms by day and staying in quaint village inns by night makes this moderate trip ideal for any bicyclist pedaling a ten-speed. German comfort and cuisine coupled with a leisurely 20 to 33 miles of bicycling each day give you a superb picture of Germany. Time to sightsee and relax add to the enjoyment of your two-week tour.

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**Middle East**

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**[87935] Adventure in Eastern Turkey—June 15–July 8.**

*Leader, Ray Des Camp, 510 Tyndall St., Los Altos, CA 94022. Cost: To Be Announced.* Turkey is a new country in an ancient land. Known as Asia Minor, it has a recorded history since the Hittite Empire some 4,000 years ago. In the interim it has

been conquered, ravaged, colonized, and populated by numerous peoples from both East and West: Assyrians, Greeks, Persians, Romans, Armenians, Crusaders, and finally the Turks. After several centuries the Turks consolidated their holdings and have dominated Anatolia since the 15th century. Our journey will take us to four of the five natural regions of Turkey. From Istanbul we'll travel to Ankara on the Central Plateau, where we'll see the Hittite capitol, Hatusha and Cappadocia, then across the Taurus range to touch the Mediterranean area at Tarsus, the home of Paul. We then visit some of the most neglected and primitive parts of Turkey, approaching the borders of Syria and Iraq, visiting Harran, home town of Abraham, and crossing the Euphrates and the Tigris to enter the Eastern Highland area, where we'll see Ararat near the borders of Iran and Russia. Lastly we'll cross the Pontos range to Trepizond and skirt the Black Sea before returning to Istanbul and home.

**[88995] Exploring Israel—September 12–October 1.**

*Leader, Ray Des Camp, 510 Tyndall St., Los Altos, CA 94022. Cost: To Be Announced.* Our trip through Israel will give an intimate view of this tiny land—its people, its political, religious, and natural history, and its landscapes. Driving, hiking, camel-trekking, and flying will allow us the broadest possible experience of the country. Our itinerary will include sites from the coastal area and the headwaters of the Jordan in Galilee to the north, through the Judean Desert and the Negev to Elat, the Gulf of Aqaba, and the Sinai to the south. We'll travel with an English-speaking Israeli guide to a Crusader castle, a Druze village, Jericho, Qumran, Ein Gedi, Masada, and the Dead Sea. We'll sample kibbutz life; visit the Monastery of Saint Catherine, where we'll climb Jabal Musa (Mt. Sinai); swim in the Gulf of Aqaba; and have time to explore and enjoy Jerusalem. While on tour we'll overnight in hotels and kibbutzim or camp out.

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**Pacific Basin**

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**[87870] Bicycling in New Zealand—December 21, 1986–January 5,**

**1987. Leaders, Betty and Paul Tamm, 6828 Saroni Dr., Oakland, CA 94611.**

*Cost: \$1,060.*

**[87875] Bicycling in New Zealand—January 5–17.**

*Leaders, Betty and Paul Tamm, 6828 Saroni Dr., Oakland, CA 94611. Cost: \$970.* Spend a unique Christmas holiday bicycling Down Under. New Zealand's varied scenery, uncrowded roads, and challenging terrain make it a delight for the experienced cyclist. Our route will sample shining beaches, lush rainforests, glaciated mountains, rolling farmland, hot springs, spectacular fjords, and much more. Most of the time we'll stay in campgrounds, but an occasional cabin, hotel, and even farm stay is included. Trains, buses, and ferries will be used to supplement our own pedal power. Come for the full month-long, vehicle-supported tour of both islands, or if your time is limited, choose either the northern or southern two-week tour.

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**Central America**

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**[87900] Belize: Reef and Ruins, Central America—February 21–March 2.**

*Leader, Wilbur Mills, 3020 NW 60th St., Seattle, WA 98107. Cost: To Be Announced.* The longest barrier reef in the Americas, tropical jungle, an amazing variety of birds and wildlife, and mysterious Mayan ruins—we will explore all this and more in Belize! South of Mexico's Yucatan Peninsula, Belize is politically stable, safe, and lightly touristed. English is the official language. Using a rustic ranch as a base, we'll spend several days in Belize's lush interior, exploring limestone caves, a jungle river, and local ruins. A highlight will be an overnight visit to the magnificent Mayan ruins of Tikal in neighboring Guatemala. Then we'll move to the Caribbean coast and a palm-studded island adjacent to the barrier reef. We'll stay at a small guesthouse on the beach, snorkel in crystal-clear, 80-degree water, and feast on fresh seafood.

**[87905] Costa Rica Natural History—March 12–28.**

*Leader, Rick Taylor, Box 122, Portal, AZ 85632. Cost: To Be Announced.* Explore Costa Rica's scenic network of national parks and wildlife

preserves, from sea-level tropical rain-forest to dwarf cloudforest nearly 11,000 feet high on the shoulder of a volcano. The resplendent quetzal, keel-billed toucan, and flights of scarlet macaws are just a few examples of the richness of birdlife in this Central American democracy. Mammals we will look for include coatis, agoutis, peccaries, sloths, four kinds of monkeys, and possibly tapirs. Lodging will vary from dormitory-style screened porches at remote research stations to modern hotels with full amenities.

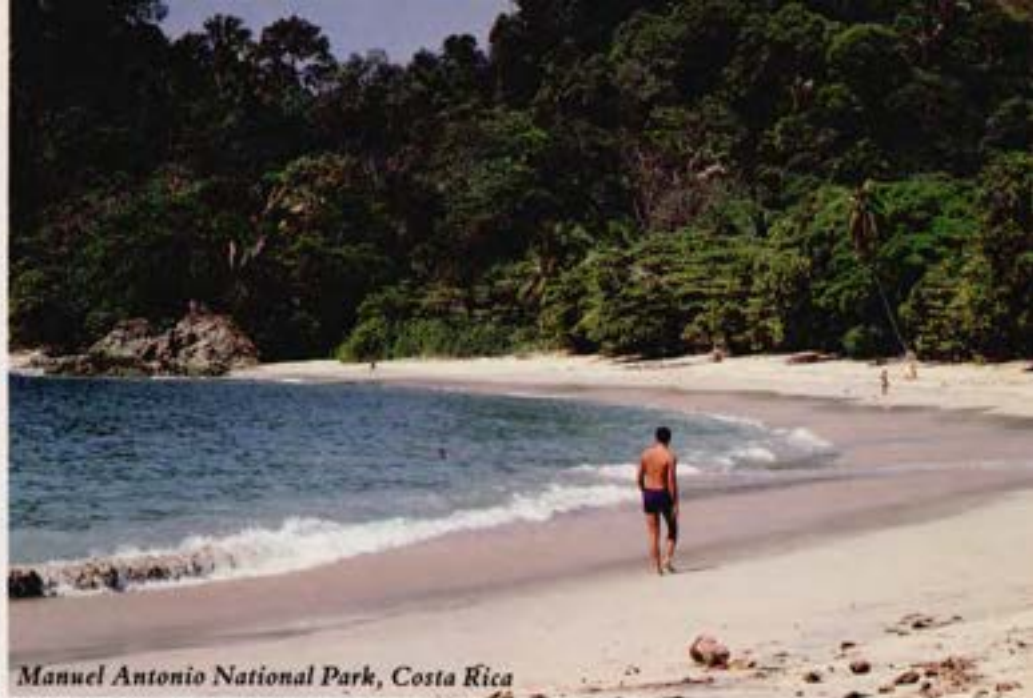
### ***1986/1987 Domestic Winter Trips***

#### **[87315] Geology of Death Valley, California—December 20–27, 1986.**

*Leader, Jim McCracken, 935 Page St., Berkeley, CA 94710. Cost: \$325.* The bare bones of our planet are nakedly in view in Death Valley, with hardly any screen of vegetation. It is a prime place to get a sound knowledge of some of the basics of geology in a short time, especially in the company of a professional. Campfire talks will expand upon the knowledge learned in the field each day. Regular vigorous hikes are also planned, and side trips to points of interest will be easy to arrange.

#### **[87306] Everglades Park, Florida—December 26–31, 1986.**

*Leaders, Vivian and Otto Spielbichler, 9004 Sudbury Rd., Silver Springs, MD 20901. Cost: \$300.* Our base camp at Flamingo in the southern tip of the park is a unique subtropical wilderness, home to rare birds and animals. We will take



*Manuel Antonio National Park, Costa Rica*

*Richard Taylor*

daily walks or canoe trips to explore mangrove and buttonwood environments, freshwater ponds, brackish water, open coastal prairies, and salt-water marshes. This leisure trip is for people of all ages who enjoy bird- and animal-watching, photography, and relaxation.

#### **[87310] Mojave Desert Special, California—January 11–17.**

*Leader, Dolph Amster, P.O. Box 1106, Ridgecrest, CA 93555. Cost: \$290.* The Mojave is best visited in late winter, when temperatures are moderate, lighting low and soft, and shadows transparent—an ideal time for exploring sensuous dunes and formations, pastel canyons, and ghost towns. Campfires and walks will stress the area's unique geology and biota. We will car-camp in or near Death Valley, with time for leisurely ex-

ploration and maybe an ascent of Telescope Peak or a visit to Eureka Valley to see the highest dunes in the country. Individuals and families of all ages are welcome—especially artists or photographers, who will find this trip planned for their enjoyment.

#### **[87316] Adirondack Ski Tour, New York—February 1–6.**

*Leader, Walter Blank, RD 1, Box 85, Ghent, NY 12075. Cost: \$430.* This trip takes us through the heart of the Adirondack forest preserve, with a different destination each night. We traverse hidden valleys, ski through high mountain passes, and cross frozen wilderness lakes. Some of the scenery is the most spectacular in the eastern United States. Your baggage will be transported for you from inn to inn. The trip leader is a certified Nordic instructor.

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# Ferns: The Seedless Wonder

Philip Kern

**Y**OU'VE SEEN THEM GROWING almost everywhere—in the woods, in city parks, along highways, in backyards, and maybe in pots in your home. They may look like other plants, and you may find them pretty ordinary, but ferns are really a special kind of plant.

For one thing, they're ancient. Ferns have been around for about 350 million years—far longer than flowering plants, which now cover much of the world. Before the age of dinosaurs, forests were mostly made up of ferns and related plants—from giant tree ferns and horsetails to the dense greenery floating on swamps on the forest floor.

It's from the remains of these ancient fern forests that we get coal today. For millions of years, decayed plant matter piled up in layers in swamps and bogs. Heat and pressure eventually turned the deepest layers into coal. In fact, many coal deposits still contain perfectly preserved fossils of ancient ferns.

Unlike most other plants, ferns don't produce flowers, fruits, or seeds. So how do they reproduce? This question puzzled people for hundreds of years. It wasn't until the late 1800s that an amateur scientist discovered the truth.

Instead of seeds, ferns produce spores. These microscopic bodies are stored in cases (called *sporangia*) underneath the fern's leaves. One sporangium may hold hundreds of spores, and one fern may bear thousands of sporangia clustered in dark bunches called *sori*. You may notice these as orange-brown bumps under the leaves of some ferns.

As the sporangia mature, they burst open, scattering the spores to the wind. If a spore lands in a good, wet spot, it will begin to grow—not into a fern, but into a tiny, heart-shaped "plant" called a *prothallium*. The prothallium produces both sperm and eggs. If a drop of water forms on it,

the sperm can swim to the eggs and fertilize one. This is what creates a new fern. Once the fern's "fiddleheads" begin to unfurl into leaves, the prothallium withers and dies.

Before fern reproduction was understood, the plants were believed to have supernatural powers. They were used to treat illnesses and cast spells, and strange explanations were given for how they reproduced. Once the mystery was explained, however, ferns became popular overnight. In England during the mid-1800s, everyone wanted one for the garden or living room. Fern mania grew so intense that English woodlands were stripped bare. In 1869 a smaller craze in the United States led to one of our nation's first laws to protect a plant—Connecticut's climbing fern.

Today there are about 10,000 species of ferns and related plants (fern allies) in the world. About 400 of these can be found in the United States and Canada. Although they like tropical regions and wet, shady forests best, ferns also grow under desert rocks, in meadows, floating on lakes, and draped over the branches of trees—in sizes ranging from less than an inch high to 40 feet tall.

Ferns lost some of their popularity early in the century, but they've been making a comeback lately. Take a look at the plants being used to decorate gardens, restaurants, hotels, offices, and people's homes: Chances are that many of them are related to some of the oldest plants on Earth.

PHILIP KERN is a professor of geology at San Diego State University.



Under the frond of a fern you can often see the sori lined up in neat rows. Sori come in different shapes depending on the kind of fern, and they may line the edges or be scattered under the surface of a frond, often covered by a hood. Not all fronds contain sori, though. Some fern species have both fertile and sterile fronds.

© Daniel D. Aguilar

With their delicate, fan-shaped leaves, maiden-hair ferns have given rise to many legends. According to a German story, a maiden fell off a cliff when her lover turned into a wolf. A spring appeared where she fell, and her hair turned into a lacy fern. Other legends claim this plant can restore, thicken, or curl hair.

© Tom Tu/CRK Photo

Horsetails, a fern ally, have been around for about 250 million years. Their odd shape makes them easy to spot. Tiny scale-like leaves and spiky branches grow out of joints along the stem. In summer the fertile stems have a cone at the tip that produces spores. The stems also contain silica, which is useful for polishing and scrubbing.

© Phil O'Hara



© Nick & Gidge Orshon

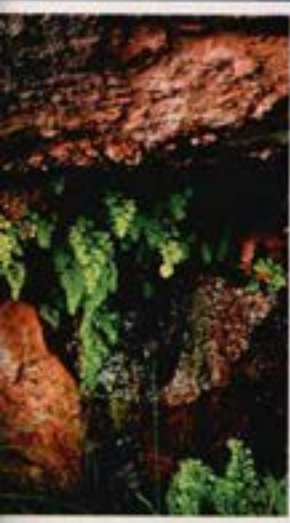
It looks like a tree, but it's really a fern. New Zealand's black tree fern (named for the black ribs on its fronds) can grow to be 60 feet tall, with a trunk two and a half feet thick. The trunk is covered with masses of roots and the stumps of dead fronds, which help the fern hold in moisture.



This odd-looking fern is one of thousands of tropical species. It belongs to a family of scrambling ferns, named for the way their forking fronds allow them to creep up trees and bushes. This species likes the edges of humid forests, and is quite common in the Philippines, Malaysia, and parts of Indonesia.



David Casagrande/DRK Photo



Looking at an interrupted fern in spring, you may not be able to tell it from other ferns. But only a few of the middle leaflets on each frond contain spores. When these spores are shed in early summer, the leaflets wither and drop off, leaving an "interruption" of empty space in the middle of each frond.

David Casagrande/DRK Photo

This chunk of coal found in a Pennsylvania mine contains fossils of ferns that existed 310 million years ago or more. As you can see, ferns haven't changed much in all that time. In fact, scientists have been able to trace some fossil ferns to their living descendants.



Counting the number of divisions on a frond is one way to identify a fern. Fronds that are cut into leaves, like the ones on this licorice fern, are "once-cut." If each of the leaves were divided into more leaves, the fern would have twice-cut fronds. There are even ferns with thrice-cut fronds, but that's as far as it goes.

David Casagrande/DRK Photo

When a new frond shoots out of the ground, its leaves are tightly curled to keep them from drying out while the stem grows. On fronds that are divided into leaves—like these deer fern fronds—each leaf is also rolled up. The new frond is called a fiddlehead because it looks like the head and neck of a violin.



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## One Man's Romance With the Santa Monicas

Carolyn Mann

**T**OPANGA STATE PARK in Los Angeles is the world's largest wildland within the boundaries of a major city. Its 9,000 acres constitute part of the 150,000-acre Santa Monica Mountains National Recreation Area, carved out of a mountain range that runs across the Los Angeles basin from Griffith Park to Point Mugu. The NRA is bounded by the Pacific Ocean to the south and west, the heavily populated San Fernando Valley to the north, and the city of Los Angeles to the east.

But in crossing the "Heavenly Hills" (a name given to Topanga by a former owner of Trippet Ranch, now the park's ranger station), one would hardly know the city existed. Freeways and snarled traffic are left behind as one follows fire roads that seem to run down the spine of the world, with panoramic vistas of ridges and valleys falling away on each side. For miles the view is of dark-green chaparral and the softer gray-green of sage scrub; then, around a corner, a patch of blue lupine, yellow-orange monkey flower, or sunflower.

At 8:30 a.m. Saturday, 16 people assemble in a parking lot at Trippet Ranch. Most of them are frequent hikers on the 32 miles of trails and fire roads in Topanga, but today they've come to build trails rather than hike them. Many are members of the Sierra Club's Angeles Chapter.

At the center of the circle of volunteers stands Ron Webster, a master trail-builder who's been hiking these mountains for nearly 20 years. Webster aligns a

trail and flags it before returning with a crew to clear and construct it. There is scarcely a hand-cut trail in the Santa Monicas that he and a group of dedicated volunteers have not worked on, and they've built about 16 miles of trail-tread.

The crew today is larger than normal; on a given day the volunteers might number from two to 20. Most have worked together before, and they are excited about the prospect of building the Garapito Trail, which Webster describes as a "magical shortcut" between the San Fernando Valley and Topanga State Park. Garapito will be built as an "Indian trail," suitable for hikers but not horses or mountain bikes. (Approximately 95 percent of the 25,000 to 30,000 annual visitors to Topanga are hikers.)

Trail-building is a dirty, sweaty job, the intricacy and self-discipline of which are largely unappreciated by most hikers. Aligning a trail usually requires

pushing or even crawling through thick brush. It's hard to see where you're going. It's often hot. In spring the deer flies and other bugs, including ticks, are terribly annoying. And rattlesnakes, though rarely seen, are an ever-present danger.

Webster has already flagged Garapito, and the trail alignment has been approved by park officials. Now the volunteers are ready to begin digging into the hillside, lopping branches, pulling out root-crown burls and stumps, breaking rock, and leveling trail-tread through what has been called the thickest stand of chaparral in the Santa Monicas. When it's finished, Garapito will be just under two miles long and have an ideal gradient of 7 to 10 percent, a slope that is supposed to provide the maximum comfort for hiking. Each mile will take 800 hours to build.

What draws these people back Saturday after Saturday, year after year, to do this work? Each will give you a different

*"Once I step off the road to go into an alignment, I'm gone. I'm in there for six or eight hours by myself. I do a lot of planning—which by the time I get out, of course, I've forgotten."*



Bob photo, Carolyn Mann



*The rugged beauty of Topanga State Park blooms in spring.*



he says. "So I wrote a letter to a man in the state parks saying I thought we could build a trail."

Webster doesn't pay much attention to exact dates, but he thinks that was about nine years ago. Since then, he and his crews have built four trails in Topanga and built and maintained trails in Malibu Creek State Park, Point Mugu, and Lower Zuma Canyon. They've rerouted a trail in San Luis Canyon, and are building a trail called Old Secret on a developer's open-space lot off Mulholland Drive, which runs along the ridge-top between Los Angeles and the San Fernando Valley.

Despite his leadership position, the master trail-builder is a somewhat reluc-



Ron Webster aligns Saddle Peak, the next segment planned for the Backbone Trail.

tant leader. Friends say he was so shy he could barely speak in front of people when he first began leading Sierra Club hikes. Reticent though he may be, Webster is nevertheless a man who can rise to the occasion. He instructs his workers on last-minute details; then, when tools have been moved aside and dirty truck-beds spread with blankets, he urges the volunteers into four small pickups. "I don't want to assign you to trucks," he tells them. "Go pick out a truck and get in it."

The trucks travel at a snail's pace over the dusty fire roads, coming to a virtual halt when they encounter hikers. Webster explains that this is part of "trail politics." He and his crew usually hike

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to the trailhead, but today they are beginning a new trail and must transport a great deal of equipment. Motorized vehicles are normally prohibited on fire roads and trails, but Webster has obtained special permission from Topanga ranger Nelson to drive to the trail site. Much of the area is fragile, and the drivers must take care not to kick up too much dust while passing hikers; otherwise Nelson will be swamped with complaints.

The crew has a good relationship with state park officials now, but this has not always been the case. In the beginning, Webster recalls, "They weren't used to having civilians running around digging up their parks. I also believe that we may have been a little arrogant," he adds. "The leadership in the Santa Monica Mountains Task Force and the Sierra Club has a lot of direct access to Sacramento. I think that put a lot of noses out of joint here. We never really learned how to work through ranger channels and the like."

Webster also recalls that they didn't always know what they were doing when they first started building trails. "We had great piles of brush," he says, laughing. "It was a total embarrassment." The crews have since learned to hide cut brush by digging little holes in the chaparral and dragging the brush into them. "Over the years they've come to trust us," Webster says of the park officials. "They've come to love us. We get along good."

Upon arrival at the trailhead, the crew walks across a meadow from Fire Road 30. From there it's one mile down to the creek where they'll begin their labors, working back up toward the trailhead. The terrain is steep, with a series of switchbacks to the creekbed, and it's loaded with wildflowers: creamy white chamise and purple ceanothus (both chaparral), yellow mustard, and bush sunflowers.

Webster believes in letting the volunteers do whatever work they like to do, and expects them to work independently. For the most part this seems to suit the trail-builders just fine: They prefer not to put their names on sign-up sheets or commit themselves to certain dates. As Webster puts it, "They just sneak in with their tools and work."

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Dunlap, who's been working with Webster for four or five years, says he's "real laid-back, relaxed. It's not like he's the boss and tells you how to do it. He pretty much allows people to do what they feel comfortable doing."

Though the volunteers are working within talking distance of each other today, often the nearest person might be a good distance away. "You might not talk to anyone for a couple of hours," says Mary Ann Keeve, a friend who also turns out to build trail just about every Saturday. But for Webster, it is this feeling of isolation that has drawn him into an escalating romance with the Santa Monicas. "Once I step off the road to go into an alignment, it's my world; I'm gone," he says. "I'm in there for six or eight hours by myself. Sure, people know where to look for me; I'm not a fool. But my day goes so wonderfully when I align alone. I do a huge amount of wool-gathering, and all kinds of thoughts come into my head. I also do a lot of planning—which by the time I get out, of course, I've forgotten."

Webster's devotion to trail-building and to the mountains led long-time friend Jill Swift, a founder of the Sierra Club's Santa Monica Mountains Task Force, to nickname him the "John Muir of the Santa Monica Mountains." Webster protests that he is not a John Muir, although he will concede that his obsession with preserving the area might be seen as a modern version of Muir's feelings for the Sierra Nevada. But it is an obsession that has caused him some pain as well as a great deal of pleasure over the years. In particular, building the Old Secret Trail has caused some grumbling among his fellow volunteers.

"Linda Palmer [president of the Santa Monica Mountains Trails Council] negotiated with the developer for a trail corridor on that open-space lot," Webster explains. "Now, an open-space lot, as you know, does not belong to the public. The trail that we build on the lot, when we complete it, will be photographed from the air, and that photograph will be used to transfer the route onto a map. The county parks will accept the trail, a 20-foot corridor, and it will become public land."

"Working on the development has upset some of the volunteers," he con-

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tinues. "But I maintain that, in some ways, that's a more important trail than the one in the park. The park is saved, whereas the only thing saved on the development is the trail corridor. But you see, people have a hard time accepting that."

There are also a couple of volunteers who are upset with Webster for receiving a stipend from the Santa Monica Mountains Conservancy. "There's been a change in people's attitude toward me since I've had the grant," he says. "It's small, and not everybody acts differently toward me, but it's almost as if what I'm doing isn't as pure anymore."

The trail council's Palmer expresses great satisfaction with Webster's efforts. "He really cares. It's not just a job to him," she says. "He did this as a volunteer first, and he's doing a tremendous public service." The conservancy has requested a renewal of Webster's one-year grant, but Palmer is not sure they will get the money.

"Grant or no grant, I'm going to continue to work in the woods," Webster says. "I'm not going to panic and just get a job to keep living." He plans to work with the National Park Service and the California Youth Conservation Corps this summer to build a section of the long-awaited Backbone Trail, which will provide southeastern access into Topanga. "Then I'll just see what happens," he says.

Webster hopes the state will acquire more public land in the Santa Monica Mountains and create more public access. In this way, as much of the beautiful, fragile, and threatened Santa Monicas as possible can be saved from development.

His crew seems to feel the same way. To celebrate the start of a new section of trail, they've packed a noon feast of fried chicken, coleslaw, watermelon, and brownies. Unfortunately, Webster will miss this party because he has gone to rescue a lost reporter.

"Such a high percentage of the crew are now leaders," he says, "they can take over the leadership and show people what to do. They don't need me." Then he adds with obvious pleasure, "They sure know how to party without me."

CAROLYN MANN is Sierra's editorial assistant.

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## Banned From the Beach

### PERDIDO KEY, ALABAMA

In 1979 Hurricane Frederic stormed ashore near Alabama's coastal city of Gulf Shores, an area affectionately known to locals as the Redneck Riviera. Freddie tore down power lines, razed buildings, and flattened dunes. A deluge of federal flood-insurance money followed—money that developers are using to turn this largely pristine coastline into another Miami Beach.

Under the Coastal Zone Management Act of 1974, the state of Alabama adopted regulations aimed at preserving its shoreline, including a requirement that buildings be set back at least 40 feet from the crest of the primary dunes. But controversy has raged recently about where that primary crest is. With dunes flattened by the hurricane, builders are edging closer to the shoreline, destroying habitat and making it likely that the next hurricane will do at least as much damage as the last one did. Beach-lovers have been angered not only by the projects themselves, but by what they see as



state officials' disregard for the public. "The state would hold a public hearing, and then never announce whether the permit had been granted or not," says Mike Mullen, conservation chair of the Sierra Club's Alabama Chapter. "You'd learn the answer when the bulldozers showed up on the beach."

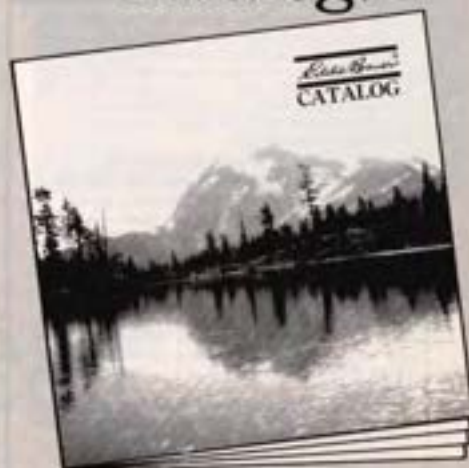
In early 1984 the Sierra Club Legal Defense Fund (SCLDF) filed a suit in state court to stop condominiums from being built on Perdido Key, which lies between Pensacola, Fla., and Gulf Shores. The court rejected the plaintiffs' arguments. But in a parallel federal case that SCLDF filed on behalf of the same plaintiffs—the Sierra Club, the National Audubon Society, and the local organization Save Our Dunes—the beach-savers prevailed.

The federal court prohibited construction on the two-mile stretch of Perdido Key where the most egregious development was taking place, pending adoption of a satisfactory setback provision and completion of an environmental impact statement. Furthermore, the court ordered the state to involve its



At Perdido Key on the Gulf Coast, developers threatened to make a largely pristine shoreline into another Miami Beach. They succeeded in developing a few sites, shown above. But thanks to a lawsuit filed by beach-lovers, future construction is prohibited.

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citizens fully and fairly in coastal development decisions. The state has subsequently adopted a setback provision that will protect beaches along the entire Alabama coast.

"It's generally a good line for the rest of the state," Rick Middleton, the conservationists' attorney, says of the provision's boundary, "but it's not adequate for Perdido Key." The federal district court agreed. In December 1985 it ruled that all construction on Perdido Key should be prohibited.

Mullen thinks the legal wrangling may already have had a salubrious ripple effect: Communities near the shore are beginning to adopt zoning ordinances to protect beaches and wetlands, and the western end of nearby Dauphin Island may be set aside as a park.

Ironically, greed has also caught up with the developers, at least for now. Mullen says, "They've overbuilt so much, you can hardly give away a condo there right now." —Tom Turner

*Birds Deep-Six  
a Power Line*

**LAGUNA MADRE, TEXAS**

THE LAGUNA ATASCOSA Wildlife Refuge on the south Texas coast is one of the 12 finest birdwatching sites in the country, according to noted birder and author Roger Tory Peterson. The refuge and Laguna Madre—a long, narrow estuary beside it—help sustain numerous species of birds, including the peregrine falcon and brown pelican. The area serves as a sort of avian Grand Central Station where birds migrating up and down the Mississippi basin meet their cousins that ply the Central Plains.

Beneath the laguna's waves are pipelines carrying oil, gas, and water. But the surface had always remained clear of interference—and many people wanted to keep it that way. One company that did not was Central Power & Light, the local utility. It wanted to build an aerial power line over the laguna for new condominium developments on South Padre, the barrier island that forms the estuary's eastern border. The power line and its 70 towers would have spanned



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eight miles at heights ranging from 60 to 120 feet above the water.

People began to worry about what the power line would do to migrating birds. Jim and Cindy Chapman, respectively chair of the Sierra Club's Lower Rio Grande Group and conservation chair of the Audubon Society's Frontera Chapter, appealed to their organizations to take on the fight.

The U.S. Fish and Wildlife Service had resisted CP&L's plan for a few years, but it finally caved in, allowing the Army Corps of Engineers to issue a permit for the project.

Conservationists turned up the heat. A teacher started schoolchildren on a letter-writing campaign in McAllen. A sportsmen's club in Houston gathered thousands of opponents' signatures. Conservationists lobbying in Austin, the state capital, turned a local issue into a statewide controversy.

"At that point we began to look like a steamroller," Jim Chapman says. "Dozens of people were writing to newspapers, to legislators. It was big news."

But the Corps showed no sign of re-



Laughing gulls off the South Texas coast: The area is a bird-watcher's paradise that helps sustain species migrating from both the Central Plains and the Mississippi Basin.

voking its permit, and it seemed that a lawsuit would be the opponents' only recourse. Then a surprise call came in from Austin. "We found that CP&L had just applied for an easement from the Texas General Land Office, which has jurisdiction over the bottom of Laguna Madre," Jim Chapman says. "We didn't even know they needed an easement!"

At the request of the Sierra Club and the Audubon Society, the Sierra Club Legal Defense Fund appealed to the Texas General Land Office to deny the utility's easement. The land commissioner decided in February that the power line must be buried under the laguna. The birds' route will remain clear. —Tom Turner



## Woodsman, Spare That Butterfly

### MICHOACAN, MEXICO

THEY ARE THE jet set of the insect world, flying as far as a thousand miles in one stretch on their way south for the winter. At speeds of up to 20 miles per hour, some flocks of monarch butterflies are so huge they can take as long as five hours to pass a given point.

West of the Rocky Mountains, the monarchs that summer in Canada and the United States migrate to California for the winter. But those living east of the Rockies always go to a certain fir (*oyamel*) forest in the mountains of central Mexico—an area that has recently been threatened

by small-scale logging operations.

According to Cynthia McVay of the World Wildlife Fund, as many as 100 million monarch butterflies choose to wait out the cold in approximately 20 known five- to seven-acre patches of *oyamel*, with most gathering in four primary areas. Timber cutting in these forests is reducing the monarchs' chances of survival.

"When these trees disappear, the climate changes," McVay says. "The wind increases and chills the butterflies." Minute climatic changes force the monarchs to be more active during the day and lose the energy they need to survive at night and during their long flight north.





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Monarchs by the millions migrate to the fir forests of central Mexico for the winter. By staying in flocks, they conserve heat.

To stem the tide of destruction in these forests, the Mexican government recently began studies aimed at protecting the monarch sanctuaries as a national park. Both the World Wildlife Fund and Monarca, a private Mexican conservation organization, are determined to see it happen.

The major obstacles to establishing such a preserve are socioeconomic. In the early 1900s the Mexican government gave small farmers a communal form of

irrevocable land tenure, under which they are forbidden to sell or dispose of their land. Because forests on that land represent one of the farmers' only means of support, there is a strong need to exploit them. As Mexico's population has grown, so have the pressures on its forests.

"The problem is poverty and resource scarcity," says Monarca founder and president Rodolfo Ogarrio. "Some people are cutting trees to plant crops and eat. Due to a population explosion, agriculture is moving into the forests."

With help from the World Wildlife Fund and other sources, Ogarrio is trying to develop alternative sources of income for the farmers in order to protect the forests. "We believe that a standing forest is more valuable than logging," he says.

Adopt-a-tree programs, resin production, and tree nurseries are among the money-making projects being considered. On land provided by local farmers, the group is setting up exhibits that will explain the monarch phenomenon to visitors, and it is encouraging the farmers to seek income by providing food, souvenirs, and guide services to tourists.

"We are trying to show visitors what living in harmony with nature can mean," Ogarrio says. "By saving these patches of fir forest, we are saving ourselves and future generations. We can't destroy the habitat of the monarch and not destroy our own habitat."

—Rick Boling

## A Range Water Would Not Improve

### JACKS CREEK, IDAHO

When Bureau of Land Management Director Bob Burford stepped off a helicopter onto the Jacks Creek plateau in southwest Idaho in 1982, he lamented all that grass going to waste.

Grass was indeed everywhere—a thick carpet of bluebunch wheatgrass extending for miles across the high desert. In a state where much of the public range is now overgrazed, the Jacks Creek area remains nearly pristine. It is one of the nation's best examples of a high-desert ecosystem, according to wildlife

biologist and activist Bruce Boccad.

Lack of water has kept it pristine. The only steady supply flows through labyrinthine canyons that plunge 1,000 feet in a series of terraced cliffs. Without water, cattle cannot graze here.

Burford was on a tour sponsored by the Owyhee Cattlemen's Association, a group that saw money in the Jacks Creek range. The cattlemen were lobbying the BLM director, a fellow rancher, for a livestock-watering pipeline that would bring thousands of cattle to graze this grassy expanse.

Burford needed no convincing. He

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was soon pointing out possible locations for pipeline extensions, envisioning cattle where deer, pronghorn antelope, and rare California bighorn sheep now roam.

Although he left saying that a decision on the pipeline would have to be made by the local district of the BLM, the Boise office did not disappoint him. It now wants to build 19 miles of pipeline in a narrow corridor between two areas being considered for wilderness designation—the Big Jacks Creek and Little Jacks Creek wilderness study areas. Most recently the agency cut its draft wilderness recommendation for Big Jacks Creek by 5,700 acres to make room for an additional four and a half miles of pipeline.

The BLM maintains that the pipeline—with its watering troughs, holding reservoir, and thousands of accompanying cattle—will not adversely affect wilderness values. "We may not maintain the range in exactly the same condition it is in now," says the agency's Bruneau Resource Manager Mike Pellant, "but we can maintain the range." He adds that the project will benefit adjacent rangelands by spreading cattle over a wider area.

Conservationists argue that the damage done by overgrazing in one area should not be mitigated by the destruc-

tion of a vestigial ecosystem somewhere else. "It's really critical to maintain as much of the remnant high desert as we can," says Boccard, who founded the Committee for Idaho's High Desert.

"To me, Jacks Creek is the equivalent of the last of the Palouse prairie or the California grasslands. It represents a once-extensive ecosystem that has been reduced to a few scattered remnants."

The battle over the Jacks Creek pipeline could set a disturbing precedent for BLM wilderness areas around the nation. If the introduction of cattle to a previously ungrazed wilderness is considered appropriate management, how will the agency treat its other wilderness areas?

The Committee for Idaho's High Desert, the Sierra Club, the Wilderness Society, the Natural Resources Defense Council, and other conservation groups are now laying the groundwork to fight the pipeline should the BLM attempt construction. In recent years the committee has managed to alter the project slightly by appealing to BLM administrators. But Boccard believes the real battle will be over the environmental assessment the BLM is now preparing. "I think it's going to be one of the thorniest and most controversial wilderness study area battles in the nation," he says.

—Glenn Oakley



The California bighorn sheep is part of the web of high-desert life that flourishes along Jacks Creek. The Bureau of Land Management has proposed a pipeline that would bring thousands of cattle to this nearly pristine rangeland, including its wilderness study areas.



## SIERRA NOTES

**The Sierra Club Annual Dinner** drew more than 300 people to San Francisco's Sheraton Palace Hotel on May 3. Members, volunteer leaders, and staff feted the winners of this year's Sierra Club awards and heard keynote speaker Jerry Brown, former governor of California, hold forth on the environmental challenges of the 1980s.

Ninety-six-year-old Horace M. Albright, who helped organize the National Park Service, was presented (in absentia) with the John Muir Award, the Club's highest honor for leadership in national conservation causes. (See "Advocate for America's Parks," page 76.) The Edgar Wayburn Award for contributions by a government official went to Rhode Island Senator John Chafee. Barbara Eastman garnered the Distinguished Service Award for a lifetime of dedication to protecting the San Francisco Bay Area. The Natural Resources Defense Fund was presented with the William O. Douglas Award for legal achievement. The Club also saluted Robert M. Lindholm, Missouri's assistant attorney general, with the Ansel Adams Award for achievement in Conservation Photography.

Several awards were presented in recognition of service to the Sierra Club itself. Former Club Treasurer Philip Hocker won the William E. Colby Award; the Oliver Kehrlein Award was given to Robert Howell, who has served as the Outing Committee's insurance advisor for nine years; and the Nebraska Chapter's Missouri Valley Group won the Denny and Ida Wilcher Award for developing a teen program to increase Sierra Club membership among future professionals.

Special Service Awards went to Marcy Benstock, David Finkelstein, and Joan Phillips. George Shipway of the San Geronio Chapter, Patricia M. Frock of the Ohio Chapter, and Barbara A. Kelly of the Tennessee Chapter each received a Susan B. Miller Award. Finally, a Special Achievement Award was given to the John Muir Chapter's John Reindl for leading a fundraising drive and negotiating the purchase of Muir's

original homesite at Ennis Lake, Wis.

**More Awards:** The Sierra Club Legal Defense Fund presented its 1986 Distinguished Achievement Award to Gordon Robinson of Tiburon, Calif. Robinson instituted what is considered a model of wise forest planning during his 27 years as principal forester for Southern Pacific Railroad. He also acted as consultant and expert witness in scores of lawsuits and administrative appeals involving the California redwoods, the Tongass National Forest in Alaska, and the Monongahela National Forest in West Virginia, among other areas. Although he was employed by Southern Pacific, "Gordon Robinson had the courage to stand up against the collective might of the forest-products industry and speak the truth," SCLDF Executive Director Fredric Sutherland said.

In Los Angeles, two Swiss-born water ecologists were presented with the 1986 Tyler Ecology-Energy Prize for their efforts to control pollution in the world's lakes. Dr. Werner Stumm, often called the "father of aquatic biology" and "the conscience of the Swiss lakes," and Dr. Richard A. Vollenweider, who led a fight to reduce pollution in the Great Lakes, each received \$75,000 and a gold medallion.

**The Sierra Club Board of Directors Election** returned two incumbents to the Board: Larry Downing and David Brower. Also elected to serve three-year terms were Shirley Taylor, Sanford Tepfer, and Vivien Li.

The Board elected Downing as Club President. Robert E. Howard was re-elected Vice-President, Richard Celarius is the Club's new Secretary, Denny Shaffer is Treasurer, and Susan Merrow is now Fifth Officer.

**The Nominating Committee** is soliciting candidates to serve on the Sierra Club Board of Directors from 1987 to 1990.

To qualify for nomination, candidates must be Sierra Club members, have knowledge of and experience in several



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aspects of Club activity, and have demonstrated exceptional commitment to the Club's objectives. They must also be willing to devote substantial time to active participation in the Board's many demanding functions.

Sierra Club members may send suggestions for candidates to committee chair Chuck McGrady, 2646 Hawthorne Place, Atlanta, GA 30345, before August 1, 1986.

**Two publications of interest:** The *International Dams Newsletter* is published in an effort to build awareness of the effects of large dams on the world's major rivers. Individuals may subscribe to the bimonthly publication for one year by sending a check or money order for \$15 to International Dams Newsletter, c/o FOR Foundation, Fort Mason Center, Building C, San Francisco, CA 94123.

The International Primate Protection League's commemorative issue, *Dian Fossey: 1932-1985*, is free for the asking. Write to P.O. Box 766, Summerville, SC 29484.

**Notice to Members:** At its May meeting, the Sierra Club Board of Directors adopted the following Standing Rule, to become effective August 1, 1986.

Standing Rule 4-4-1, Removal of Member for Cause

1. Suspension or removal of a member shall occur only by action of the Board of Directors for good cause based upon actions inimical to the fundamental interests or functioning of the Club. The Secretary shall notify the member by registered mail at least 15 days preceding the date of the Board of Directors meeting at which the suspension or removal will be considered. The member shall be provided an opportunity to respond to the charges and address the Board on these issues before final action on the question by the Board. The effective date of suspension or termination of a member shall be no earlier than five (5) days following the meeting of the Board at which the action is taken.

2. The membership of any Director cannot be suspended or cancelled unless the Director has first been removed from office as provided for in Bylaw 5, paragraph 5.10.

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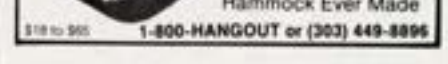
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**How toxic are darkroom chemicals? (Timothy J. Dale, Salisbury, Md.)**

Chemicals used in photo processing vary in their toxicity depending on the kind of processing being done. As a rule, color processing requires more toxic chemicals than black-and-white.

Film-processing chemicals are not considered carcinogenic, but they can be irritating to exposed skin and poisonous when swallowed. Although they lose their processing capability when their shelf-life expires, they remain potentially toxic. Professional film processors recommend keeping darkrooms well ventilated, following all handling directions printed on chemical containers, and keeping the containers tightly sealed and stored on a high shelf away from children.

Eastman Kodak provides material-safety data sheets to answer questions about specific processing chemicals it makes. List the chemicals you'll be using (along with their catalog numbers, if available) and mail to Eastman Kodak Marketing Administrative Services, 343 State St., Rochester, NY 14650.

**Now that there's an oil glut, are the oil companies changing their tune about the need to go after remaining reserves? Have any major new deposits been found? (Bob Tyler, Idaho Falls, Idaho)**

The U.S. economy runs on less energy today than it did before the shortages of the early 1970s, thanks in part to conservation efforts by

industry and citizens alike. The amount of energy required to produce one dollar of gross national product in 1987 (21,000 BTUs) will be 20 percent less than it was in 1973. Worldwide oil consumption has followed a similar downward trend, hitting a low of 59.2 million barrels of oil a day in 1985, compared to a high of 65.1 million in 1979.

Meanwhile, as consumption has dropped, production has increased, forcing prices for petroleum products ever lower. This decline in oil prices, exacerbated by the politically motivated price-slashing of the OPEC nations, makes exploration and production prohibitively expensive.

Geologists consider the current glut a temporary phenomenon, however, and insist that as the pendulum swings back toward shortage, new reserves will be needed to meet future ener-

gy demand. Although the U.S. Geological Survey is making another of its periodic assessments of worldwide oil reserves, its geologists say they expect no hidden ocean of oil to be discovered.

**Am I at more risk from smog while riding a bike than I am in my car? (Kevin Van Dyke, Los Angeles, Calif.)**

Surprisingly enough, bicycle riders appear to be less at risk than automobile drivers, even during peak smog periods.

A 1977 Department of Transportation study of bicycle and automobile commuters in Washington, D.C., found that over a given period of time the cycling group had lower pollutant levels in their blood than their car-bound counterparts. Significantly, the study was conducted on days when smog levels were

especially high. A physician who commented on the findings observed that sedentary drivers had less well developed respiratory systems than the bike riders.

The cyclists did suffer by comparison in one respect: The test showed eye and throat irritation to be more of a problem for them, although the discomfort reportedly subsided soon after their rides.

**I recently saw a Los Angeles newspaper ad offering products made from elephant ivory. I thought that was illegal! (Sheila Gottlieb, Oxnard, Calif.)**

Products made from the endangered Asian elephant (fewer than 40,000 of which remain) are still banned in California. But traffic is permitted in products made from the African elephant, which at 1.5 million individuals is merely "threatened." Although commerce in African elephant products is supposed to be strictly regulated by import guidelines and international permits, Steve Tekosky of the Los Angeles City Attorney's office calls the required documents "meaningless, often counterfeit" and says that there is no way to keep track of them.

Tekosky believes that as long as there is a market for ivory, poachers will violate quota restrictions to meet the demand. Because of a technical description of its status and the legal loopholes involved in trade restrictions, the African elephant could very well become officially endangered in the near future.



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