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# SIERRA

THE SIERRA CLUB BULLETIN

MAY/JUNE 1983

VOLUME 68/NUMBER 3

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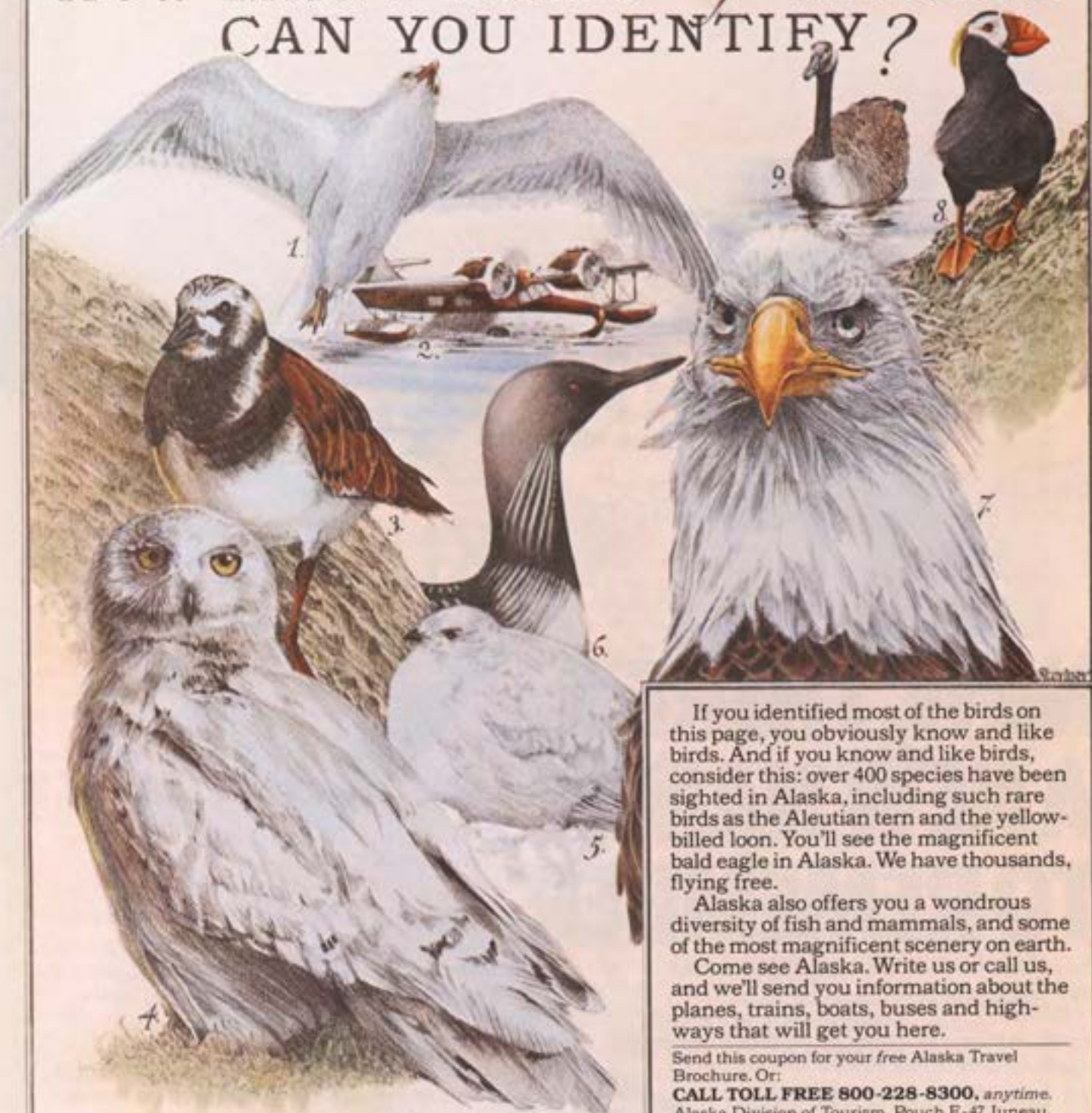
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#### THE LOWDOWN ON NICKLES

I was delighted to see and read Jon Nickles' article, "The Lowdown on Closeups" (November/December, 1982). I have hiked and camped with Jon for several years and can attest both to the care with which he seeks out photographic subject matter and to the determination he exhibits with regard to the activity.

He unfortunately misled readers by saying, "If I am really limited on space or weight I will take extension tubes and leave the bellows at home." Jon's pack makes it clear he leaves very little at home. If faced with a choice, I suspect he would leave his sleeping bag or stove home first.

His comment of "There's only good weather" brings back memories of the Brooks Range trip we negotiated together two years ago. The evening of our worst camp location—the edge of a swamp—and in the midst of cold drizzle and wet gear, Jon shared the same quote. Then he added, "It sure brings out the blues." That evening gave our group something to remember about Jon for the rest of the trip.

*William G. Trudessu*  
Ketchikan, Alaska

#### WHAT PRICE WARMTH?

"How to Choose Outdoor Clothing" by Mike Scherer (March/April, 1983) is full of all sorts of good advice on outdoor clothing if you accept his basic (implicit) premise. That premise is that the best approach is the ultralight, high-technology one, irrespective of any other considerations. But Scherer omits considerations that I feel should be fully discussed in any magazine such as *Sierra*: cost to the individual, and cost to society. As I was reading the article, I kept thinking that surely in the next paragraph Scherer would discuss the extremely high prices for most of the materials and garments he touts. But this information was nowhere to be found. By "cost to society" I refer to the environmental effects that may be connected with the production of these materials as opposed to natural fibers. I hope all of the glossy ads for "high-tech" equipment and clothing that

permeate each issue of *Sierra* are not turning the magazine of the Sierra Club into a mouthpiece for the recreational industry.

*Woodruff T. Sullivan, III*  
Seattle, Wash.

#### Mike Scherer replies:

While it is true that ultra-light, high-tech outdoor gear can carry an ultra-heavy, high-budget price tag, synthetics do not routinely cost more than natural fabrics. Gore-Tex can be twice as expensive as coated nylon, but polypro long undies cost about the same as wool ones. Cotton long johns are half the price of both, and those made from a wool/angora blend—a warm, soft natural fabric—can cost two to three times as much as polypro. Similarly, polyester-pile sweater-weight fabrics cost about the same as medium-price natural-fiber sweaters and shirts. The careful shopper can buy warm, light-weight clothes at moderate prices.

The "cost to society" is more difficult to assess, since both synthetic and natural-fiber mills discharge large quantities of pollutants into the environment. Buying natural fabrics is no guarantee that you are supporting "clean" industry.

#### AUTHOR'S QUERY

I am now revising my book *Walking Softly in the Wilderness: The Sierra Club Guide to Backpacking* (first published 1977; 60,000 in print). I need suggestions from backpackers who know the book (or don't)—corrections, updates, reports on experience with gear and methods, suggested additions and deletions, gripes . . . you name it. I'm especially interested in feedback on the performance of Gore-Tex and its cousins. How well have the "miracle" fabrics worked for you?

I'll make use of comments whenever I get them, but only the ones I receive by June 1 will definitely be reflected in this revision. Brief and informal is fine. Contributions will be acknowledged. Please send them to me care of Jim Cohee, Sierra Club Books (2034 Fillmore Street, San Francisco, CA 94115).

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San Anselmo, Calif.

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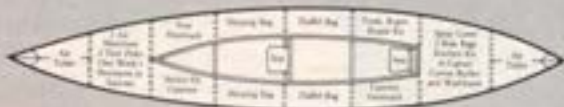
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## [PHILLIP BURTON 1926-1983]



Conservationists across the nation felt a keen sense of loss at the death of Representative Phillip Burton on April 10. To many, Phillip Burton epitomized the dedication of the conservationist and the skill of the legislator. Sierra Club board member and former president Dr. Edgar Wayburn said, "America's wilderness and national parks have lost their greatest champion. Phil Burton saw further into the future and more clearly than most of us. He knew that the people of America have a great and growing need for open spaces, for natural beauty, for great solitudes and the stillness of the wild. He put his unsurpassed political skills into service to preserve these things for the people."

"Conservationists everywhere will fondly remember this great, intense, gruff bear of a man who fought so long and hard for the people—for their environment, for social justice and for peace. Phillip Burton's conservation achievements are, to a considerable degree, the conservation history of the past three decades."

That impressive record includes legislation for the establishment of California's Golden Gate National Recreation Area and the Santa Monica Mountains National Recreation Area, plus protection for the Channel Islands and Lake Tahoe. Burton was instrumental in the expansion of Redwood National Park and in the passage of the Alaska National Interest Lands Conservation Act. The 1978 Omnibus Parks Act that more than doubled wilderness acreage in the national park system was nicknamed the "Burton bill" by friends and foes alike.

At the time of his death, another "Burton bill" was moving toward passage. Burton had just successfully defended the California Wilderness Bill, H.R. 1437, against weakening amendments. In a final tribute to Phillip Burton, the House of Representatives passed the bill on April 12. Dr. Wayburn stated, "This law is a fitting tribute to a man whose heart was as big as the wilderness he loved and fought to protect. Phillip Burton will not walk this wilderness, but we remember and honor him in its preservation."

### OREGON WILDERNESS BILL PASSES HOUSE VOTE

By a vote of 252 to 93, the House of Representatives passed H.R. 1149, designating some 1.2 million acres of Oregon national forest land as wilderness. The bill includes such popular areas as the North Fork John Day Wilderness in northeastern Oregon and the Diamond-Thielson area on the crest of the Cascades. A number of weakening amendments met with emphatic defeat.

As this issue went to press, the House passed a wilderness bill dealing with California national park and forest lands. The bill, H.R. 1437, designates 2.3 million acres as wilderness. Wilderness opponents offered numerous amendments in the House Interior Committee to delete certain areas, but these efforts were beaten back. Senator

Alan Cranston (D-Calif.) has introduced a similar bill, S.5, in the Senate.

Readers concerned about the preservation of wilderness should urge their senators to speed consideration of state wilderness legislation. Address: Senate Office Building, Washington, D.C. 20510.

### CALIFORNIA WILD RIVERS IN RENEWED JEOPARDY

A U.S. district court judge has ruled that the transfer of five California rivers into the National Wild & Scenic Rivers System two years ago was invalid because of faulty procedures.

On his last day in office, former Interior Secretary Cecil Andrus granted a request from then-Governor Jerry Brown to place



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the rivers, which had been protected by the state, into the federal system, which affords them greater protection. The rivers are the Eel, Klamath, Trinity, Smith and lower American.

Although the environmental impact statement that had been prepared for the transfer was ruled adequate, the judge stated that incorrect forms had been used and that the distribution of the EIS and the required notice in the *Federal Register* occurred during the same week, both minor technical errors.

Timber and water interests have already begun lobbying the new California administration and the state legislature to remove the rivers from state protection. Moreover, Governor George Deukmejian has refused to appeal the court's decision, indicating that he opposes federal protection for the five rivers.

Senator Alan Cranston (D-Calif.) has introduced legislation to place 83 miles of California's Tuolumne River under the National Wild & Scenic Rivers System. The bill, S. 142, is considered crucial by environmentalists, who point out that the Federal Energy Regulatory Commission is now routinely processing preliminary permit applications for hydroelectric projects on the Tuolumne River and has already granted two such permits.

## THE NUCLEAR WASTE LAW— HOW WILL IT WORK?

The Sierra Club will be taking an active interest in the implementation of the National Nuclear Waste Policy Act signed into law in January. The new law establishes a schedule for identifying and selecting sites that will become permanent repositories for high-level nuclear waste.

The Department of Energy intends to move as quickly as possible to select sites, and work is already in progress at Hanford, Washington. Other sites under active consideration include Gibson Dome, within a mile of Utah's Canyonlands National Park; the Nevada Test Site; and sites in Texas, Louisiana and Mississippi.

## COURT ORDERS A SLOWDOWN OF TEXAS SUPERPORT

A U.S. Circuit Court has ordered the Army Corps of Engineers to revise its environmental impact statement on the supertanker port proposed for Galveston Harbor, Texas. The opinion reversed a ruling by a federal district court, and the Army Corps must now reconsider its decision to issue construction permits for the project. The permits had been

challenged by the Sierra Club and other environmental groups on the grounds that the Corps had filed an inadequate environmental impact report on the project.

The appeals court agreed that the Corps had failed to properly evaluate the impact of a major spill on Galveston Bay and that it failed to consider the impact of onshore facilities planned in conjunction with the port expansion.

## TOWN MEETINGS AND ACID RAIN

Citizens in New Hampshire have been successful in using town meetings to call on the federal government to take action to control acid rain. A resolution was passed unanimously at almost 200 town meetings (out of a total of 220 in New Hampshire). The measure calls for a 50% reduction in sulfur dioxide by 1990, and pushes for a conclusion of the current U.S.-Canadian negotiations that would set similar limits between the two countries.

"This was a collaborative effort," said Bob Norman, Sierra Club New England Chapter Chair. "We had the support of citizens' groups, environmental organizations, sports groups, foresters—everyone!"

Acid rain is a serious problem in New Hampshire, where rainfall is 40 times more acidic than normal, drinking water is contaminated and residents suffer severe economic losses caused by acid rain. The New England Chapter has been active in promoting passage of the measure at the town meetings. Political analysts have noted that important issues often come to public notice through such meetings; the nuclear freeze was one such issue that first reached national attention because of New Hampshire town meetings.

## SENATORS TO THE DEFENSE OF PUBLIC LANDS

Senators Dale Bumpers (D-Ark.) and John Chafee (R-R.I.) have joined forces to protect public lands from the administration's land-sales schemes by introducing S. 891, the Federal Land Retention Act of 1983. The bill reiterates the policy established by many earlier laws—that federal lands should generally be retained in public ownership.

The bill is designed to restrict the sale of important federal lands, particularly those with high recreational value, and to encourage the transfer of suitable surplus federal lands to state, local and nonprofit agencies for use as parks and for other public purposes.

The bill further requires that when consolidation of federal land holdings is planned,



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Concerned readers can contact their senators, urging them to cosponsor this legislation. There is as yet no companion bill in the House, but representatives can be asked to cosponsor a House version when one is introduced.

## ANTARCTIC TREATY NATIONS MEET

A special meeting of the Antarctic Treaty nations will be held in July in Bonn, Germany, starting negotiation of a treaty to regulate mineral exploration and development on that continent.

The Sierra Club and environmental groups from around the world have been working to preserve Antarctica as a world park, or to at least ensure that coastal and marine areas vital for whales, seals and penguins are fully protected against the hazards of oil development.

The U.S. is now preparing its position, which reportedly will both favor making it easy for industry to obtain exploratory licenses and ease environmental protection requirements at each step of development.

## THE VOTING OF THE GREEN

At a St. Patrick's Day "Green Grades" press conference, the League of Conservation Voters gave members of Congress their grades on environmental votes. League Director Marion Edey handed out shamrock plants to the several members of the House who received perfect or near-perfect scores, and to high-scoring senators as well.

The congressional votes used to rate members of the House and Senate were selected by a committee of representatives from 15 national environmental groups, including the Sierra Club. The voting chart includes tallies on such diverse topics as toxic substances, water policy, energy, soil conservation, wilderness, coastal protection and air pollution.

Perfect scores of 100% in the House went to Gerry Studds (D-Mass.), Howard Wolpe (D-Miss.), Michael Barnes (D-Mass.), and Don Edwards (D-Calif.). The four highest Senate grades went to Senators Edward Kennedy (D-Mass.), Don Riegle (D-Miss.) and Carl Levin (D-Miss.), each of whom scored 92%, and Senator Paul Sarbanes (D-Md.), who scored 91%.

The chart, which also rates state and regional delegations, is available for \$3.00 from: League of Conservation Voters, 317 Pennsylvania Avenue, S.E., Washington, D.C. 20003. □



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**S**PORT HUNTING has long been an important part of the Alaska scene, a fact that was fully considered in the framing of the Alaska National Interest Lands Conservation Act (ANILCA), which became law in December 1981. During the four years spent hammering out this landmark legislation, much deliberation was given to this sensitive issue: painstaking studies were made, and all sides of this complex subject were taken into account. In the end, careful compromises were reached: Of the 43.6 million acres of national parklands established by ANILCA, 19 million were designated "national preserves" rather than "national parks" or "national monuments." This was done specifically to allow sport hunting in these particular areas. (All national parklands—in fact, all ANILCA lands—are open to subsistence hunting where it has been established practice.) These national preserves were most often adjacent to (or even formed integral parts of) national parks—as for example in the Wrangell-St. Elias National Park and Preserve—and most contain the regions



## HUNTERS TAKE AIM AT ALASKA'S NATIONAL PARKS: S. 49 and H.R. 1493

EDGAR WAYBURN

most highly esteemed by sport hunters.

Alaska's total land area comprises 375 million acres. The 19 million acres of new national preserve land make nearly 340 million acres of this total available for sport hunting. This figure includes:

- The National Wildlife Refuge System's 76 million acres;
- All of the National Forest System's 23 million acres;
- Virtually all of the 104 million acres belonging to the state of Alaska;
- The 44 million acres of generally productive habitat owned by Alaska's natives (sub-

ject to closure or fee);

- The remainder of Alaska's public lands administered by the Bureau of Land Management (141 million acres, also subject to closure or fee).

To put things into slightly different perspective, only the 32 million acres in national parks—8.5% of Alaska's total area—are currently off limits to sport hunting. In setting aside this modest proportion of Alaska's wildlands and consigning a relatively small percentage of Alaska's wildlife to non-huntability status, Congress was responding to the major-

ity of Americans who feel that there should be at least some sanctuaries on our federal land—a few places where natural processes prevail, where wildlife is self-regulating, and where people may view animals in settings of unparalleled scenic splendor. Furthermore, as enlightened hunters know, such sanctuaries are essential if wildlife species are to survive and thrive.

On the face of it, the amount of ANILCA parkland established seems reasonable (if not meager) considering the size of Alaska, and it would certainly appear that sport hunters have an adequate share of Alaska's

*Proposed federal legislation would open large portions of Katmai and other Alaskan national parklands to hunters.*

LIBBY MILLER/ALASKAPHOTO



land and wildlife resources. At the time ANILCA was passed, Alaska's Senator Ted Stevens (R) gave his blessing to this quota; indeed, he was a prime mover of the various compromises that were initiated. But reneging on his decisions of 1980, Senator Stevens is now pressing hard for his "Alaska National Hunting Bill," S. 49. This bill, which might be more properly entitled the "Anti-National Park Bill," would change the designation of 12 million of the 32 million Alaskan acres now in national parks to that of national preserves, thus opening up more than one third of these sanctuaries to sport hunting. (Representative Don Young [R-Alaska] has introduced an identical bill, H.R. 1493, into the House of Representatives.)

Eight of the 10 national parks in Alaska would be affected by the Stevens-Young bills. Of the 24.6 million acres in new parks and monuments established by ANILCA, roughly one half—11.9 million acres—would be changed to preserve. The remaining 7.5 million acres now protected are in pre-ANILCA parks. Two recently established national-park units would be totally abrogated. Among the national-park units under the gun are:

- **Katmai:** This wilderness park is the nation's largest and most important sanctuary for the Alaska brown bear. The Stevens-Young bills would open the entire ANILCA addition of 1 million acres to sport hunting.
- **Denali (formerly Mt. McKinley):** In ANILCA, Congress added 2.4 million acres, including upland habitat needed to complete the park ecosystem. The Stevens-Young bills would convert 1.5 million acres of this new addition to preserve status.
- **Wrangell-St. Elias:** This spectacularly scenic complex of 16,000-foot peaks, river valleys, and usable uplands already has a 4-million-acre national preserve that contains 80% of the Dall sheep in the park/preserve. Nevertheless, Stevens and Young want to change 2.3 million more acres of the park to preserve.
- **Gates of the Arctic:** Currently a 7-million-acre Arctic wilderness park, this magnificent unit would be reduced to less than 2 million acres by the Stevens-Young bills.

Both Stevens and Young have managed to get a number of co-sponsors for this anti-park, anti-wildlife legislation. Who and what is behind them? There are a small number of commercial hunting guides who may profit from guiding trophy hunts in an extra 12 million Alaskan acres. (In 1982, 387 commercial guide operations grossed approximately \$50 million by catering primarily to big-game hunters from the United States and other countries.) In addition, the National Rifle Association and the Wildlife Legislative Fund (an Ohio-based group of wealthy sport hunters) are pouring money

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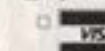
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The following is an acreage summary of what the Stevens/Young bills would do to the parks established by ANILCA:

Park	Total Acreage	Acreage changed to preserves by Stevens/Young bills	Percent reduction
Aniakchak	138,000	88,000	64
Denali*	2,426,000	1,526,000	63
Gates of the Arctic	7,052,000	5,099,000	72
Glacier Bay*	523,000	214,000	41
Katmai*	1,037,000	1,037,000	100
Kenai Fjords	567,000	567,000	100
Lake Clark	2,439,000	1,025,000	42
Wrangell-St. Elias	8,147,000	2,322,000	29
TOTALS	22,329,000	11,878,000	48

\*ANILCA addition

into propaganda, providing editorial material to news media all over the country and mounting an extensive grassroots campaign. Interior Secretary James Watt (who once remarked that he was always for the hunter rather than the animal being hunted) has lent his enthusiastic support to the "concept" of the bill, and the Reagan administration is expected to endorse it at upcoming hearings.

Also sure to back this legislation are the various mining, oil-and-gas, logging and other development interests that fought so hard and unsuccessfully to block passage of ANILCA. If Stevens and Young can build momentum for their bills, these interests can be expected to press for their own amendments, which could eventually nullify a great deal of ANILCA. Thus not only do the Stevens/Young bills threaten Alaska's remaining wildlife and the integrity of our national park system, but they threaten to shatter the series of compromises that were so carefully reached and finally embodied in ANILCA.

This must not be allowed to happen. ANILCA is the greatest land-conservation achievement of the century. Even more

important, it represents a major "first" in America's legislative history: It embodies a major attempt at wise land-use planning; it embodies consideration for the culture of Alaska's Native people; and it embodies a compassion and stewardship for our fellow animals and for the integrity of their habitat that we have not demonstrated before.

Unfortunately, in the two-plus years since ANILCA's enactment, the Reagan administration has failed to support this legislation and the intent of Congress. It has provided pitifully inadequate funding for the implementation of ANILCA and has adopted policies and regulations designed to favor exploitive interests. Before considering fundamental changes in ANILCA (as S.49 and H.R. 1493 would clearly bring about), the Congress should ensure that the existing act is fully and properly administered.

Action on the Stevens and Young bills can be looked for, however, in the immediate future. Hearings by the Senate Energy and Natural Resources Committee were scheduled to begin on April 15. Thus, this becomes the most critical threat now facing Alaska. You can help meet it by writing your senators and representative and expressing your



"Senator, some Alaskans have come to discuss safety in the national parks."

viewpoint on S.49 (Stevens, R-Alaska) and H.R. 1493 (Young, R-Alaska). Your letter may, in fact, help tip the balance, for we are facing a well-heeled and well-organized campaign. Without your expression of concern, much that we worked for and thought that we—and the world—had won may be lost forever.

## THE MISSOURI RIVER A Parceling of the Waters

JAMES AUCOIN

**T**HREE COLD, high-country streams, the Gallatin, Madison and Jefferson, surge out of the Rocky Mountains and merge near the town of Three Forks, Montana, to form the beginning of the Missouri River. By the time it reaches the Mississippi above St. Louis—2500 miles away—the Missouri and its tributaries have drained more than 500,000 square miles, one sixth of the continental United States.

The Missouri collects the waters of some of the most significant rivers of the Great Plains: the Yellowstone and Powder rivers, the Little Missouri, the Cheyenne, the Niobrara, the Platte, the Little and the Big Sioux, the Kansas and the Osage. It is the largest tributary of the Mississippi.

The Missouri River system carries more water than any other western river, including the Colorado, the Arkansas, all the rivers of the western Gulf basin and the Rio Grande. What is more, only about a third of the water has been apportioned through legally recognized water rights. Consequently, it is often argued that the Missouri has surplus water.

That might be difficult to discern from a cursory glance at the river's various "improvements." Already so dammed and diverted that the U.S. Corps of Engineers must now conduct multimillion-dollar environmental mitigation programs, the Missouri has once again become the focus of new corporate raids on its resources.

Exxon Corporation and other giant energy companies have proposed projects for the Missouri that would require millions of acre-feet of water each year. (One acre-foot is 325,851 gallons—enough to flood one acre to the depth of one foot. It is enough to supply the needs of a family of four for



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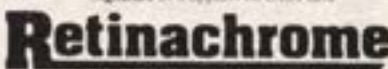
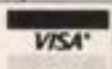
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almost two years or to irrigate a one-acre field for about one growing season.)

Irrigators want to pump more water out of the river, while barge companies want more water in the river for a deeper channel. In addition, there are lesser but perhaps more significant demands on the river. Municipalities want to protect the quality of the Missouri for drinking water, and environmentalists and wildlife protectors want to preserve and revitalize the river's ecosystem.

If all the proposed irrigation and energy projects were completed, at least 8.57 million acre-feet of water would be removed from the Missouri River, according to the Missouri Basin States Association, which represents the basin's ten states. On a yearly average, about 21 million acre-feet of water flow in the Missouri past Sioux City, Iowa, midway to the river's junction with the Mississippi. Developers, therefore, are proposing to use more than two fifths of the river's average annual flow.

The effects of removing so much water from the river can only be surmised, but the state of Iowa has tried to predict losses that would occur. In a 1982 publication, Iowa officials estimated that their state would annually lose \$5.1 million in revenue from barge traffic, \$3.9 million in hydroelectric power, and unaccountable amounts in curtailment of industry, irrigation, public drinking supply, recreation and wildlife habitat.

The political swirl around the Missouri River has focused on one project that would use a relatively insignificant amount of water. The fate of the coal-slurry pipeline proposed by Energy Transportation Systems, Inc. (ETSI) could, however, determine the fate of the river. Based in San Francisco, the corporation is a consortium of energy companies. Its project would pipe

about 57,000 feet of the river's water uphill and west to Wyoming, where about 20,000 acre-feet would be used to slush crushed coal to Arkansas and Louisiana.

Bob Warrick, spokesman for the Nebraska Chapter of the Sierra Club, explains why ETSI is so important. "The ETSI water and coal-slurry pipeline project is the first step in a program planned by federal bureaucrats in Interior, Agriculture and the U.S. Army Corps of Engineers to divert between 1 million and 3 million acre-feet of water annually from the Missouri. But the studies used to plan these projects are inadequate; the amount of water available in the basin has never been accurately quantified."

Warrick recalls that the controversy over the Missouri River is strongly reminiscent of the early stages of the huge debate over the Colorado River. "The diversion of Colorado River water," he explains, "was based on inadequate and inaccurate data on the amount of water available. A similar mistake in the Missouri basin will lead to the same kind of legal and resource problems still being quarreled about in the Colorado basin."

The ETSI project is the first of the proposed Missouri River projects to be approved by state and federal officials. Opponents of the project have sued in federal district court, charging that the approval was granted improperly.

Apparently anticipating the furor over the project, officials of the state of South Dakota (the water was, at the time, to have been withdrawn from the Oahe Reservoir on the outskirts of Pierre, South Dakota) secretly negotiated a deal with the federal government and the pipeline company. Other states and the public were given only a cursory review of the proposal.

South Dakota had a considerable interest



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in arranging the ETSI-Missouri River deal—and for an ironic reason. ETSI originally planned to pump groundwater from the Madison Formation, an aquifer underlying eastern Wyoming and western South Dakota, near the mines that would be the source of the coal for the slurry pipeline. The U.S. Bureau of Land Management based the project's environmental impact statement on this plan. The Missouri River was considered a long-shot alternative to the groundwater source. Of the EIS's more than 1,000 pages, only about 20 are devoted to the Missouri River "alternative." No one who commented on the draft EIS thought the Missouri River would be used as the source of water for the project.

The EIS did show, however, that the Madison Formation would be quickly depleted by the massive energy project—much to the alarm of South Dakota officials. Within 50 years, according to the EIS, western South Dakota's water table would drop as much as 200 feet, out of the reach of most users. The city of Edgemont in South Dakota's Black Hills, for example, would be left without a water supply.

So South Dakota's governor, William Janklow, went looking for a compromise. After a year of secret negotiations with ETSI officials, Janklow announced the terms of

the Missouri River water deal on September 16, 1981:

- ETSI would use Missouri River water from the Oahe Reservoir instead of groundwater from the Madison Formation;
- In exchange for the water, ETSI would pay South Dakota \$1.4 billion over the next 50 years. The state plans to use the money for intrastate development of the Missouri River and other water resources;
- ETSI would allow western South Dakota communities to tap into the company's 275-mile aqueduct in order to obtain water for municipal needs.

The ETSI project may be a terrible precedent, but it would not be a tremendous user of water. The project's 57,000 acre-feet would amount to about one inch off the top of the Oahe Reservoir, which has a capacity of 23.5 million acre-feet—"a little more evaporation," as Janklow described it.

The concern over the ETSI project stems from the federal government's willingness to sell the water to commercial interests, many from outside the river's basin, without assessing the cumulative effect of the withdrawals. In addition, South Dakota's sale of Missouri River water to ETSI without notifying, much less consulting, the states downstream raises serious questions. Can upstream states legally seize upon the Missouri



*Morning fog rises off the Missouri at Karl Mundt National Wildlife Refuge, S.D.*

as a marketable resource at the expense of hydropower production, irrigation, navigation and fish and wildlife habitat in downstream states?

In announcing a lawsuit by the states of Nebraska, Iowa and Missouri to stop ETSI from using Missouri River water without further study, Nebraska Attorney General



TREK BICYCLES



PHOTOS © KENT & DONNA DANNEH



Millions of acre-feet of Missouri River water would be diverted by projects on the drawing board or already completed (such as the Ft. Randall Dam, above, in South Dakota).

Paul Douglas said the water-service contract executed by ETSI and the Interior Department's Bureau of Reclamation was approved "without adequately developing, studying, analyzing and evaluating the environmental consequences of the withdrawal of the water and without an up-to-date and accurate analysis of the needs for

water in the Missouri River basin." The three-state suit and another, similar suit filed by the Sierra Club, the Kansas City Southern Railway Company and the Nebraska, Iowa and Rocky Mountain chapters of the Farmers Union charge that when the federal water-service contract and water-withdrawal permit were approved,

the Corps of Engineers, which operates the reservoir, and the Bureau of Reclamation, which markets the water, violated the National Environmental Protection Act and other federal laws.

On the other side, the state of South Dakota petitioned to join the suits on the side of ETSI, and the upstream states of North Dakota, Montana and Wyoming have indicated their willingness to side with South Dakota.

**I**T IS DIFFICULT to learn precisely what plans private industry has for Missouri River water, but the Missouri Basin States Association has compiled information on a number of plans and has concluded that "proposals for diverting water from the Missouri River to areas outside the Missouri River drainage . . . are so large that it is difficult to comprehend their impacts on the basin's hydrology and economy."

The association's report lists 71 projects proposed within the basin. Most are irrigation projects planned for the Missouri's tributaries. Also included are direct withdrawals from the river for irrigation, municipal and industrial uses. The total volume of water that would be used by these projects hasn't been calculated. It includes, though, a 1.5-million-acre-foot request for one irriga-

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tion project in South Dakota, called "CEN-DAK." By far the most ambitious in-basin proposal, CENDAK would use Missouri River water to supply central-pivot irrigation systems on 400,000 acres. Another project within the basin, the O'Neill Unit on the Niobrara River in northern Nebraska, would reduce the inflow to the Missouri by about 166,000 acre-feet annually. Though under construction, the O'Neill project has been indefinitely delayed by a federal court order.

Out-of-basin proposals (of which ETSI is one) are even more significant. Exxon Corporation has proposed pumping 1.7 million acre-feet annually from the Missouri River for coal and oil-shale development in four western states. Three other coal-slurry pipeline proposals would use a total of 74,000 acre-feet annually. The Garrison Diversion Unit in North Dakota, a one-million-acre irrigation, municipal and industrial water supply proposal, would remove two million to three million acre-feet from the Missouri basin each year.

The granddaddy of them all, the High Plains Diversion, would ship from 1.6 million to 3.9 million acre-feet of Missouri River water to irrigators on the Colorado, Kansas, Nebraska and Oklahoma high plains, where a thriving irrigated economy is threatened with collapse as the farmers near the end of their underground water supply.

The High Plains Diversion has its origin on the dusty plains of the Texas Panhandle. In seven Texas high plains counties, shrinking water supplies forced 600,000 previously irrigated acres to be returned to dryland production—a 24% reduction in irrigation

levels. In 1958, irrigators in those counties could irrigate 118 acres with one well. In 1980, one well could irrigate only 62 acres. In just 22 years of resource consumption, Texas irrigators have depleted the aquifer by 23%.

The Texans draw their groundwater from an ancient geologic formation called the Ogallala Aquifer. It stretches from northern Texas to Nebraska and underlies parts of six states: Nebraska, Colorado, Kansas, Oklahoma, Texas and New Mexico. It is thinnest under Texas and New Mexico, so problems have become serious there first.

The Texas irrigators have long known their alternatives: shut down irrigation or replace the water. Nonmandatory water conservation alone will not halt the depletion.

At the instigation of Texas politicians, Congress ordered a six-year, \$6-million study of the economic stability of the irrigated high plains to determine how to forestall the collapse of irrigated agriculture. Several schemes were studied; the one considered most attractive by the Corps of Engineers would take water out of the Missouri River at St. Joseph, Missouri, 50 miles north of Kansas City. Construction would cost from \$9.7 billion to \$16.1 billion in 1981 dollars, not including the cost of building lateral canals to deliver the water to the fields. It would be the most expensive water project ever attempted in the United States.

This project alone would remove between one million and six million acre-feet of water annually from the Missouri River. The aqueduct would cut a path as wide as Nebraska's Platte River through 400 miles of Kansas prairie, ending at a reservoir in Colorado. The cost of moving the water to the

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high plains would be from 7 to 20 times more than the irrigators themselves could pay. The American taxpayers would have to subsidize the project.

"Given the current environment," said Representative Tom Harkin (D-Iowa), "the future reliability of the Missouri River for use by downstream states is uncertain at best."

Harkin has joined Representatives Robert Young (D-Mo.) and Douglas Bereuter (R-Neb.) in proposing legislation that would both create a Missouri River Basin Commission to oversee planning and management of the river and require the basin's 10 states to negotiate a pact that would allocate river resources among competing users. Upstream states, unfortunately, have shown little interest in supporting such legislation—or any other formal attempt to resolve the conflicts.

*James Aucoin specializes in natural-resource issues. His book Water in Nebraska: Use, Politics, Policies will be published early next year by the University of Nebraska Press.*

**THE WEST  
COAST GIRDS  
FOR THE  
GYPSY MOTH**

MARTHA TURE

**T**HE GYPSY MOTH has arrived in California, and with it has come the long-fought controversy over how to control the destructive insect. In the Northeast, the gypsy moth has been a notorious pest for years. The caterpillar, no bigger around than a daisy stem and not much longer than a straight pin, is everywhere. In town after town throughout the region, trees are girdled with burlap or aluminum foil smeared with vaseline each spring to prevent the caterpillars from reaching the leaves. Caterpillar droppings, called "frass" by the knowledgeable, cover everything. The damage to trees has been formidable in the Northeast; the potential damage in California is staggering.

The gypsy moth is native to Europe, Asia and Africa, where its populations are normally limited by more than 100 natural predators and diseases. In 1869, a French naturalist imported them to Medford, Massachusetts, where he hoped to crossbreed them with silkworms in order to establish a

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*The gypsy moth, long a plague in the East, has once again invaded California.* C.S. RAPP

local industry. During a storm, the moths escaped from his study. Within 20 years, they had become a pest. Left to its own devices, the gypsy moth might migrate only about a quarter of a mile a year, but these modern times and gypsy moths hitchhike across the country. The first gypsy moth was recorded in California in 1975. In 1976, three more were trapped. The state mounted a carbaryl-based eradication program, and the moth was eliminated.

Then in 1980, five were trapped in the San Francisco Bay Area. In 1981, 59 moths were trapped. By the end of 1982, 102 moths had been trapped in 12 counties. The war was on.

A succession of poisons has been used against the gypsy moth. For many years lead arsenate was the standard poison used against the larvae, not because it worked

well but because it killed the caterpillars within the immediate view of those who paid for it. Its successor was DDT; in the 1950s and 1960, millions of acres in the Northeast and in Michigan were repeatedly treated with DDT. The moth population was reduced and their spread retarded, but they were not eradicated. In 1962, carbaryl, more commonly known as Sevin, came into use, and it's still the favored chemical insecticide for this purpose. It degrades more rapidly in the environment than DDT, but it is more acutely toxic to mammals. Where it has been used in the Northeast, moths in the immediate area have sometimes been eradicated along with such nontarget organisms as bees, other insects and birds. Yet the gypsy moth continues to spread.

The state of California has begun to use carbaryl against the moth, even though there is ample evidence that it is not the only option. There is a safer alternative, *Bacillus thuringiensis*, B.t. for short. This is a biolog-

**SIGHTINGS**



*Keith Norton, minister of the environment of Ontario, Canada, visited Sierra Club headquarters in early April. Acid rain was a subject of discussion and mutual concern. So too were the problems of dealing with toxic substances. Above: Mr. Norton and Martha Ture, Sierra Club activist and author of "The West Coast Girds for the Gypsy Moth," page 26.*

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ical "poison" that kills gypsy moths by paralyzing their digestive tracts.

California is not the first state to have to choose between carbaryl and other, less dangerous options. In April 1982, the Connecticut Department of Health Services urged citizens to use B.t. rather than carbaryl. According to Alan Siniscalchi of that department, "Sevin has the potential not only for immediate health problems but also for long-term effects as well. Significant exposure to Sevin can cause headaches, dizziness, and eye, stomach or respiratory problems. . . . While there is no evidence at this time that Sevin causes birth defects in humans, the fact that studies done with dogs, guinea pigs and rats have all yielded similar results is very disturbing and should serve to alert people to a potential danger. It just makes good sense not to expose yourself and others to a potentially harmful chemical when other safer methods of caterpillar control are available."

Pennsylvania's Department of Environmental Resources sounded a similar note. In September, 1982, "Governor Dick Thornburgh," it announced, "directed that an environmentally sound, biological insecticide be used in place of chemical sprays throughout most of Pennsylvania during the . . . 1983 gypsy moth suppression program."

"More than a decade of testing has convinced us that we can control the gypsy moth without any risk to our environment, and I believe we should seize the opportunity to do so," said Thornburgh. "Gypsy moth suppression has now reached the point where we no longer need to rely on chemical sprays. It is now appropriate to make the change to B.t. . . . This switch to the biological insecticide will enable us to do a better job more economically through the use of an environmentally sound process."

Officials of California's Department of Food and Agriculture (CDFA) believe that California's eradication problems are not comparable to the problems of controlling the moth in the East. A case in point is the city of Palo Alto. This woody area south of San Francisco, the home of Stanford University, is known for the environmental awareness of its citizens. When the state informed the city that it planned to spray Sevin over about 500 homes, the city officials searched for an alternative. Mayor Betsy Bechtel worked with environmentalists. Ruth Troetschler, head of the pesticide task force of the Sierra Club's Loma Prieta Chapter, and Steve Dreistadt, research associate with Citizens for a Better Environment, in cooperation with city staff came up with an alternative program. It involved applications of B.t. rather than carbaryl; since the biological insecticide is less persistent than the chemical and thus requires more ap-



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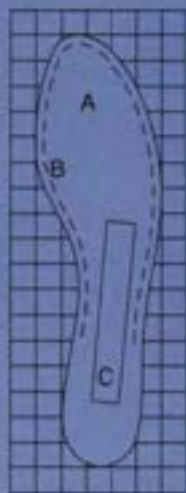
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plications, the cost might well be greater. The mayor and the city manager presented the alternative program to the project managers for the CDFA, offering to make up any difference in cost to the state. The state, however, rejected the proposal because they felt that B.t. had not been proven as an eradication tool.

In Berkeley, California, citizens are already preparing an alternative, a neighborhood control program that includes tree banding, trapping, and educational programs among its strategies. Steve Dreistadt has been working with local groups in an effort to prevent the spread of the gypsy

moth and to avert the spraying of carbaryl.

California Sierra Club activists met in early March to discuss the gypsy moth situation. In a resolution, they protested the selection by the state of carbaryl and the lack of a state Environmental Impact Report on the use of the pesticide. They also urged expanded research and detection programs for the gypsy moth. But the state, so far, is unwilling to accept any plan but its own for control of gypsy moth infestation.

*Martha Ture is executive director of the California Coordinating Committee on Pesticides, and chair of the Bay Chapter's Toxic Task Force.*

## PUTTING A PRICE ON THE OCOEE

NANCY MICHEL

**T**HE OCOEE RIVER in southeastern Tennessee has been chosen twice in the last four years as the site of the national championship whitewater racing competition. A five-mile stretch of almost-continuous, tumultuous Class III and Class IV rapids has made the Ocoee one of the most exciting whitewater runs in the country. Commercial rafting trips allow nonpaddlers to experience the thrill of its big waves and boiling holes. But the renovation of a diversion dam and flume project by the Tennessee Valley Authority (TVA) has cast a cloud over the future of recreation on the Ocoee.

The dam and flume, known as Ocoee No. 2, were built in 1912-1913 and purchased by the TVA in 1939. The section of the river from which the water was diverted remained a dry riverbed for decades, until 1976, when Ocoee No. 2 was taken out of service because its wooden flume had deteriorated badly. The river returned to its bed, and enthusiasts soon discovered the Ocoee's provocative whitewater. Seven thousand recreational visits in 1977 burgeoned into 90,000 in 1982. Whitewater recreation is possible the entire summer because of TVA reservoirs upstream from Ocoee No. 2.

The TVA began its \$26-million rehabilita-

*Sierra* MAY 1982



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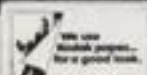
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tion of Ocoee No. 2 in 1979 and originally planned to finish in February 1983. The TVA offered to permit recreation on the Ocoee once the project was finished, but only if outfitters paid for the power lost while the river was not diverted into the rebuilt flume. It offered 82 eight-hour recreation periods at a cost of \$262,500. This "user fee" would escalate as power rates rose.

Two lawsuits have failed to halt the project. One suit, which is currently under appeal, ended in a 1982 decision that TVA did not need a state permit for the project. The second, filed on March 9, 1981, by the Ocoee River Council (ORC), a group determined to preserve recreation on the Ocoee, sought to stop the project, claiming, among other things, that the TVA misled recreationists during a public-comment period by never mentioning the need for reimbursement for power lost while water was released for recreational purposes. The suit was dismissed before it reached a full hearing.

**T**HE QUESTION is no longer whether the renovation project will be finished but whether river outfitters should have to pay the TVA when the river is not generating power.

"TVA does not need the electricity that Ocoee No. 2 will generate," states David Brown, executive director of the ORC. Demand for electricity has been slacker than originally anticipated; in fact, of the 17 reactors in the TVA's original nuclear power program, four have been canceled and four others indefinitely deferred because of declining growth in the demand for electricity. In fiscal year 1977, 117.7 billion kilowatt-hours were used by customers in the TVA service area, compared to only 108.5 billion in fiscal 1982. Ocoee No. 2's 19-megawatt generating capacity represents less than one-tenth of 1% of the TVA's generating capacity.

The river itself is a considerable money-maker. The Tennessee Department of Tourist Development estimated the Ocoee netted \$3.8 million in tourist revenues in 1981, when 70,000 recreational visits were made to the river. That same year, Ocoee outfitters paid more than \$50,000 in taxes to Polk County. In contrast, the TVA's Final Environmental Impact Statement on Ocoee No. 2, dated July 1979, stated that the net annual benefits of the project will not be noticeable in power rates.

According to David Brown, "Our position is that the river is of more value economically and socially as a resource for recreation than as an unneeded 19-megawatt source of power."

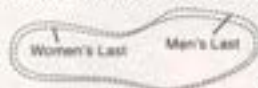
The TVA does not directly dispute this claim. According to S. David Freeman, TVA board member, Ocoee No. 2 is not

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Recreation versus power: An old conflict flares anew on the Ocoee, Tennessee's prime whitewater river.

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being rebuilt to gain more generating capacity. "We don't need the capacity," he says flatly. "We are building it as a basic conservation measure, to use renewable energy rather than coal and nuclear power." The TVA expects Ocoee No. 2 to produce electricity for about three cents a kilowatt-hour over the next 35 years—far more cheaply than any nuclear or coal plant. Moreover, as

environmentalists are quick to point out, use of hydroelectric power slows the depletion of nonrenewable natural resources.

To many environmentalists, arguments about the relative merits of hydro or non-renewable power are moot during a period of electricity glut. Earl Self, of the Sierra Club's North Alabama Group, says, "In the final analysis, the recreational value is so

much greater than that of the power that the economic arguments are absurd."

And S. David Freeman seems to agree in some ways. "I think it is more valuable to society to use the water on weekends for rafting," he states. "But I don't think it's fair for a person to pay one penny more for electricity in order for someone else to enjoy a rafting trip. I believe in rafting. I believe it

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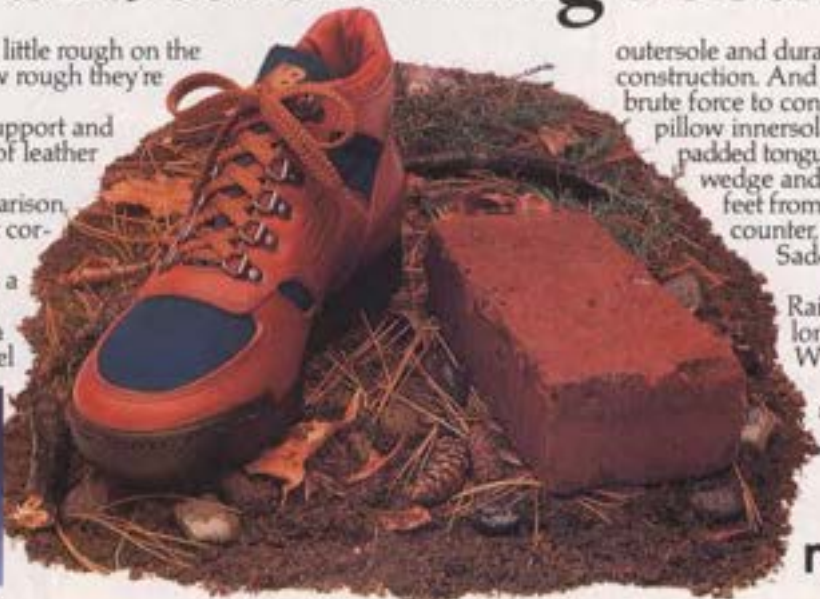
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is just as important as the power. And we are going to have the rafting. We are perfectly willing to provide as much water as they need as many days as needed. But we will be wasting the water for power purposes, and I think for gut fairness people who enjoy that raft ride should pay a fee which reflects the extra cost to the power consumer."

This proposed scheme has many critics among environmentalists. "TVA has set up a no-win situation," says Earl Self. "The economic deal they've proposed is sure to fail. The fees will eventually have to be so high to pay for the use of the river that demand will fall. This is a deliberate Catch-22 being set up." On another level, beyond the details of the working arrangement, longtime observers of the TVA are critical of the philosophy behind it. "Charging recreationists for the use of the river," says Self, "is perpetuating an error, the error of building Ocoee No. 2 during a period of energy glut. This is the same argument that was used for the Tellico Dam. First the TVA built it against the best advice of responsible experts. Then they argued that since the thing is built, it must be used—whether the public will benefit or not."

S. David Freeman also raises the question of public benefits. People who use the lake behind Blue Ridge Dam upstream of Ocoee

No. 2 don't like being left with a mud hole in the summer when the lake is drawn down to generate electricity. If the TVA gives up power generation for the rafters without compensation, why shouldn't it also give up power generation so Blue Ridge Lake residents can enjoy their lake during the summer? "If you apply that argument to every lake in the TVA system, you have a large amount of money involved," Freeman says. "The principle is very, very important to us."

Though the various issues—fees, number of days, private paddlers versus commercial rafting interests—are still being negotiated, whitewater recreation on the Ocoee is assured at least through the 1983 summer season. The TVA has agreed not to use the flume until the season is over—even though it will be finished before then. To recreationists, the argument boils down to why recreation on the Ocoee shouldn't be considered socially valuable in its own right—without recreational use being dependent on the users' ability to repay the TVA. To the TVA, the question is simpler: Who's going to pay for the power?

*Nancy Michel, an Alabama-based writer, has published pieces on horticulture and cane-syrup-making in Organic Gardening, EnviroSouth and Grit.*

## CALIFORNIA'S NEW GOVERNOR Bad News for the Environment?

STAFF REPORT

CALIFORNIA'S NEW GOVERNOR, George Deukmejian, took office in January amid fears that he might try to repeal the environmental gains of the past decade. While many of these fears are well-based, given Deukmejian's campaign statements and his environmental record, there is also hope that he will not follow the anti-environmental path chosen by the Reagan administration.

This optimism acknowledges Deukmejian's highly developed political savvy. The governor would certainly prefer to spare his administration the kind of political heat generated by the actions of Reagan appointees Watt, Burford and others. The test of the

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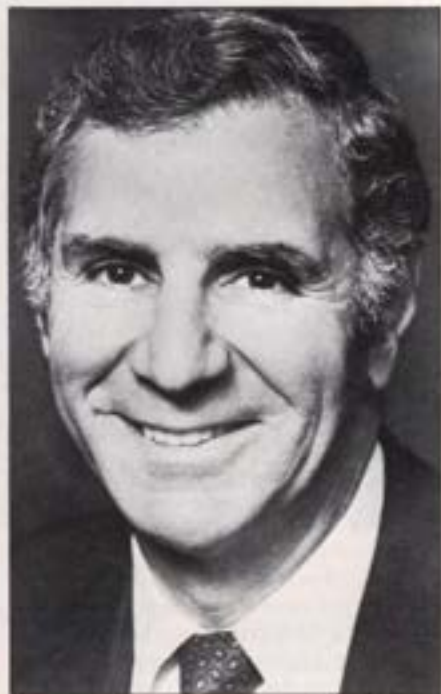
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*Deukmejian: Still something of an unknown quantity to California environmentalists.*

Deukmejian administration will not be the calculated neutrality of its rhetoric, however, but the actions taken by the governor and his administration.

Deukmejian ran on campaign promises to abolish the California Coastal Commission and otherwise put an end to what his slogans deemed "regulatory glut." That may have pleased some polluters, but conservationists reacted sharply. There were abundant expressions of outrage and a flurry of press conferences to denounce the spread of Wattism to California government.

Watt's personality makes him an easy target; Deukmejian's does not. However misguided on matters of ecology, however ideologically inflexible, Deukmejian is nevertheless a man of integrity and political acumen with none of Watt's arrogance. Instead of petition drives or demonstrations, conservationists envision a long, drawn-out struggle over the state budget and regulations—as well as an educational program to convince the administration of the value of ongoing environmental programs.

Environmentalists will eagerly be watching what befalls existing environmental programs in the state.

Deukmejian won the election by a margin of less than 1% of the vote and is faced with the worst state budget crisis in recent history. He can ill afford to risk losing any public support during his administration's infancy.

One lesson Deukmejian seems to have learned from the Reagan experience is to



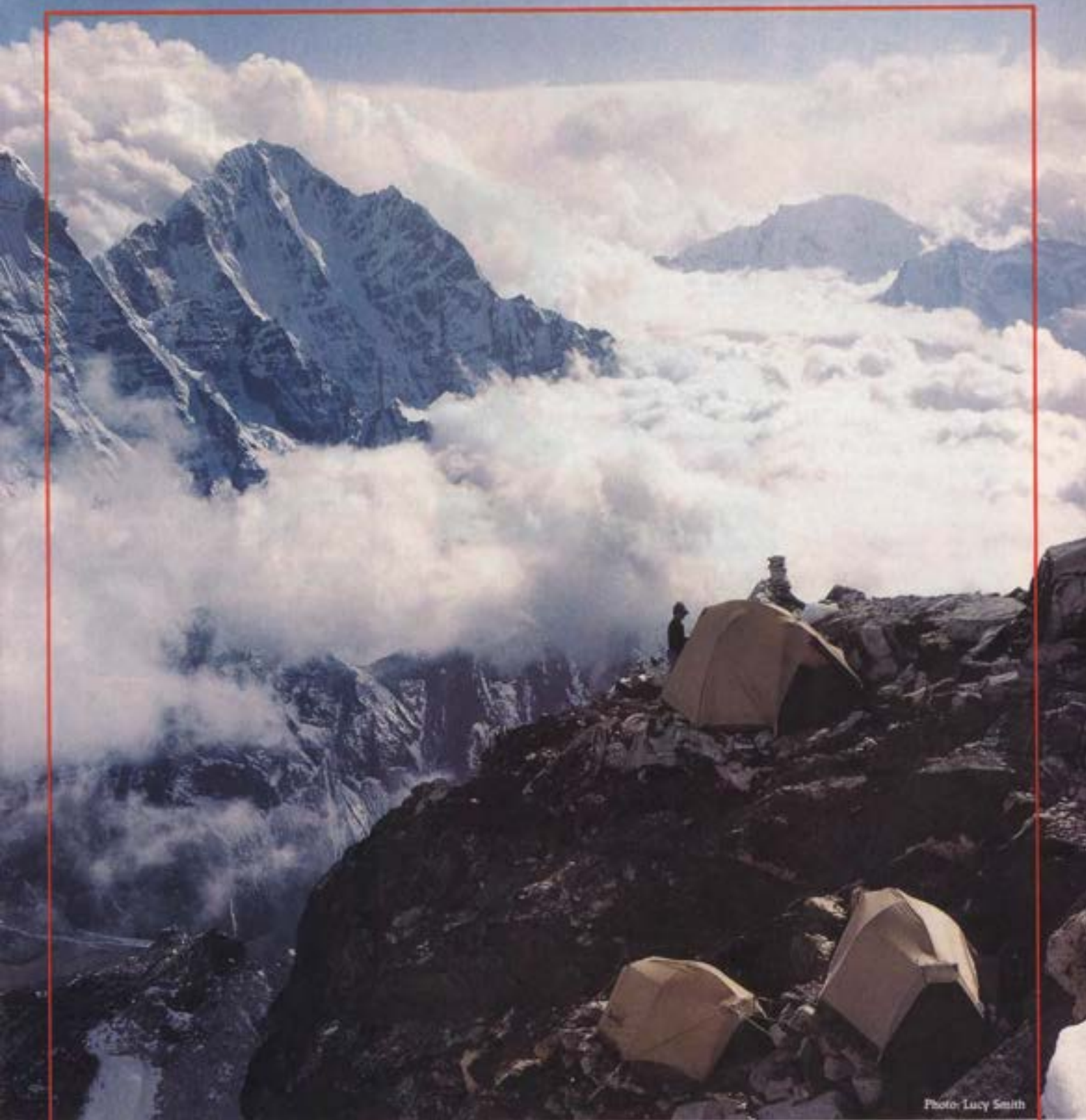


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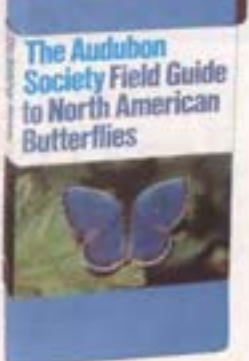
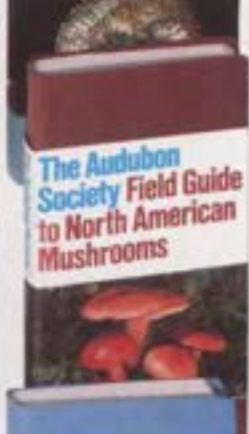
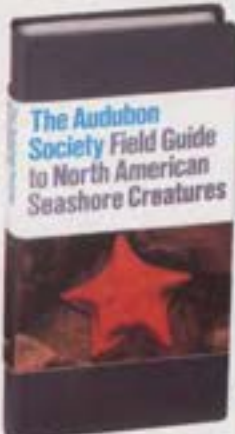
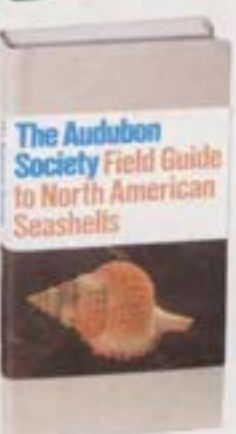
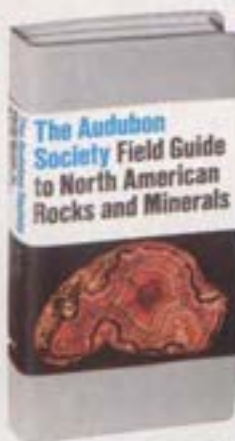
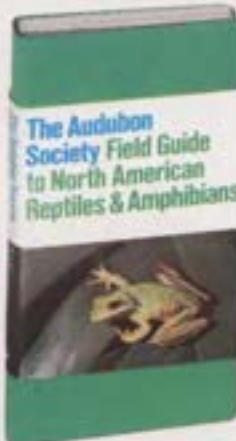
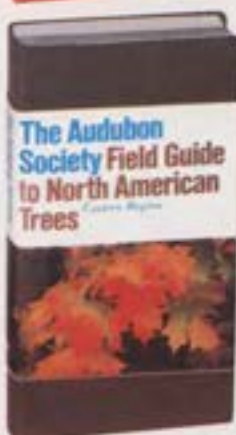
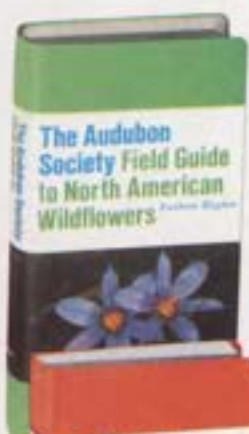
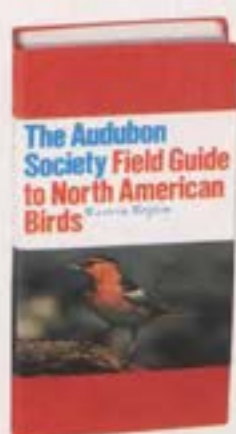
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not staff his administration with appointees who are hostile toward the programs they are charged with administering.

His appointment of Gordon Duffy as secretary of environmental affairs, with responsibility for air- and water-quality programs and coordination of offshore-drilling activities, was viewed as a positive sign by environmentalists. Duffy, an optometrist, is a former assemblyman. He is viewed as a moderate committed to public health; he recently said, "I'm very people-oriented. I worry very much about what's going to happen to the people of California and what's going to happen to the children. What's good for California and Californians is going to be good for business. Healthy Californians are good for business."

Deukmejian also made a good appointment to the chair of the California Energy Commission: former Assemblyman Charles Imbrecht. The commission is charged with forecasting future energy demand, siting power plants, developing new energy sources and adopting efficiency standards for buildings and appliances. Imbrecht is a political moderate with an outstanding environmental record. He scored better than 90% on the most recent environmental voting evaluation for the state Assembly and has long supported alternative sources of energy.

**D**EUKMEJIAN'S APPOINTMENT of Gordon Van Vleck as resources secretary could spell trouble for environmental programs. Van Vleck, a cattle rancher and former head of the California Chamber of Commerce, has questioned the wisdom of California's air-quality and endangered-species programs. He apparently is willing to endorse massive cuts in regulatory programs, and once said, "To strengthen the flame of capitalism we must act to shed the burden of regulation." Van Vleck will head the agency charged with managing California fish and game, parks and resource development. The big question is, will Deukmejian rely for advice on Resources Secretary Van Vleck or on his more moderate Environmental Secretary, Duffy?

Deukmejian's proposed cuts in funding for environmental programs present potentially grave difficulties. A budget deficit of nearly \$2 billion confronts the state. No program can entirely escape cuts, and conservation activities will have to bear a fair share. However, Deukmejian's budget unfairly singles out the Air Resources Board, the Coastal Commission, the Energy Commission and the Water Resources Control Board for reductions that will impair enforcement of standards essential to human health.

Deukmejian's budget proposals also in-

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The Coastal Commission, charged with protecting California's delicate and magnificent coastline, is under every bit as great a threat. The governor's budget takes particular aim at cutting commission staff, who provide the expertise necessary to evaluate the impacts of offshore oil drilling. Also proposed is the virtual elimination of the commission's legal staff—without which enforcement of the act would be impossible.

When he campaigned for governor, Deukmejian pledged to abolish the Coastal Commission, but he cannot do so without the concurrence of the legislature. The question thus becomes: How tough will the Democrat-controlled legislature be in protecting California's strict environmental laws?

Some state legislative leaders have already taken stands against any anti-environmental excesses from Deukmejian. Senate President David Roberti has said that protection of public health and of the coastline will be top priorities in the Senate. Assembly Natural Resources Committee Chairman Terry Goggin has made it clear that he will fight any budget cuts that might harm state environmental programs.

The legislature seems to have a staunch ally in California's new Attorney General John Van de Kamp, who has made it clear that he will actively enforce the state's environmental laws. One of Van de Kamp's first actions was to restore the environmental-law unit in his office, which had been cut by Deukmejian when he was attorney general. Lieutenant Governor Leo McCarthy has also pledged protection of California's environment.

Governor Deukmejian's approach, so far, has been conspicuously unlike President Reagan's. Deukmejian has extended olive branches to the environmental community in the form of several excellent appointments; at the same time, he has slipped in a few thorns in the form of budget cuts for key environmental programs. It will take several months to determine whether the governor will wage a protracted war or opt for a peace pact with environmentalists. The answer may depend in large part on the ability of California conservationists to muster support for environmental programs in a way that demonstrates both public acceptance and an understanding of political realities. □

# RUCKELSHAUS RETURNS TO EPA

## *A Change in Course or Business as Usual?*



New EPA chief William Ruckelshaus. Can he redeem Reagan's dismal environmental record?

### DENNY SHAFFER

**A**NNOUNCING HIS APPOINTMENT OF the new EPA administrator, President Reagan described William Ruckelshaus as "the one man in this country better qualified than anyone else to take charge." The general reaction was similar, widespread and bipartisan. Environmentalists respect Mr. Ruckelshaus's record and reputation for integrity, but what is needed is more than a saint in gray flannel.

Our nation urgently needs a new environmental-policy direction from the President, but political damage control seems uppermost in Mr. Reagan's mind. The purge at EPA and the ongoing investigations have created a situation of dangerous political volatility. "After the dust settles," President Reagan hopes, "and the country sees Bill Ruckelshaus at work in the EPA, our people will recognize that this administration's commitment to a clean environment is solid and unshakeable."

Environmentalists are accustomed to rhetoric of this sort; but so far the evidence or proof have been lacking. Mr. Ruckelshaus faces a gigantic task. The EPA has been depopulated, underfunded and thoroughly demoralized by the events of the last two years. Will the agency get better under Mr. Ruckelshaus? The prospects for improvement are good; things could hardly get worse.

But the question remains of whether Mr. Ruckelshaus is window dressing or whether serious changes are intended. The administration itself is reportedly split on the issue: one group, including Vice-President Bush and Mr. Ruckelshaus, wants a profound policy shift toward actual environmental protection. The other, headed by Interior Secretary Watt, remains committed to its confrontational stance and to the policies that produced the EPA scandal in the first place.

It will not be difficult to determine whether the environmental policies of the Reagan administration are changing. There are several key actions that must be taken if the

EPA is to improve anything but its image. Here are four areas the Sierra Club will be watching closely:

- **Abandoned Hazardous-Waste Dumps:** The source of the Superfund scandal was the handling of the Superfund program. Progress so far has been little, late, and subject to delays possibly caused by political maneuvering. The EPA should develop and release an actual timetable for cleaning up the 419 sites identified by the Superfund program. This will involve asking Congress to appropriate money for such a cleanup. There already exists, however, a fund of up to \$1.6 billion for this purpose.

- **Acid Rain:** It's time the United States quit stalling and took action to reduce air pollution and curb acid precipitation. Will Mr. Ruckelshaus support new legislation to reduce air emissions of sulfur dioxide—the main culprit in acid rain—by 50 percent within 10 years?

- **The EPA Budget:** The EPA will need a lot more money if we are seriously to expect progress in dealing with air and water pollution, controlling toxic substances, helping state programs, conducting research and enforcing the law. A minimum operating budget (not including the Superfund, which is separate) should be at least \$1.3 billion.

- **Clean Water:** The laws that regulate dumping substances in water have lagged far behind today's technology. For example, manufacturers of organic chemicals, plastics and synthetic fibers discharge more than 100 toxic pollutants into American rivers and lakes. New rules for the industry set standards for only 46 of these substances. Moreover, the standards aren't strict enough; existing technology is capable of doing a better job. The EPA should establish tough controls on all these pollutants—and enforce them.

This period of transition at the EPA is a crucial opportunity for the Reagan administration and the nation. We look forward to new dedication—and to results. □

# JOIN US AT SNOWMASS

This year, take a vacation you'll truly remember.

Enjoy unlimited opportunities for fun in the Colorado Rockies, and join like-minded Club members for four days of excitement, fellowship and serious discussion—and maybe a bit of history in the making.

**P**icture yourself at Snowmass, Colorado, this Fourth of July weekend with hundreds of other environmentalists in a revival of the Sierra Club's oldest tradition, the High Trip. But it's a revival with a twist. In the earliest days of the Club, everyone took off for Yosemite for the summer. Men camped downstream, women upstream, couples in the middle. Folks climbed mountains, staged impromptu plays and dances, and had a good time. Out of that fellowship came today's Sierra Club.

This summer's gathering, the Sierra Club International Assembly, will be a mixture of that old-style summer camp, a college in the woods and a political convention. First of all, we intend to have fun together—and Snowmass is a good place to do it. There's great hiking, fishing, climbing and rafting in the heart of the Rockies. We'll have square dancing, sing-alongs and a barbeque, and nearby Aspen boasts concerts, restaurants, shops and nightclubs.

But in addition to having fun, we hope to learn from one another in a series of meetings at which every one of the 1,500 people attending is both teacher and student. We're calling these meetings "Sierra Sessions," and they'll be about environmentalism in action—addressing such topics as political strategies, conservation skills, international issues, fund raising and Club history.

We mentioned a political convention—here's why. The national midterm elections of 1982 were a tremendous milestone for the Sierra Club and for environmentalists in general. Now we're looking forward to taking a more active role in the 1984 elections and beyond. Come talk politics, and meet major presidential candidates and other political leaders in informal settings.

Yes, this year take more than a vacation. Be a part of a new Sierra Club tradition.

To preregister for the International Assembly or to receive more information about it, complete the coupon on page 77. □



*As the old "High Trip" photo shows, environmentalists have been convening in the great outdoors for many years—although they haven't always had John Denver, hot-air balloons and a bevy of presidential hopefuls as potential distractions! Participants in this summer's Sierra Club International Assembly will temper serious exchanges on pressing environmental issues with concerted bursts of good old-fashioned fun, enjoying the numerous recreational opportunities at Snowmass and Aspen, in the heart of the Colorado Rockies.*

HIGH TRIP PHOTO: J.N. LACONTE, PHOTO RIGHT: © DAVID BROWNELL, INSETS, CLOCKWISE FROM UPPER RIGHT: © DOUG LEE, DAVID BROWNELL/TOM STACK & ASSOCIATES, BRIAN PARKER/TOM STACK & ASSOCIATES, DAVID BROWNELL/TOM STACK & ASSOCIATES, TOM STACK/TOM STACK & ASSOCIATES



# THE NATIONAL PARK

*The People, the Parks, the Politics*



# SYSTEM

ROBERT CAHN

THE SELF-CONFIDENT VISAGE OF Secretary of the Interior James Watt beamed from the TV screen one recent morning, declaring to the American public: "The national parks are in better shape than they have been in years. . . . We've restored the parks. The parks were abused by the past administration and past Congress, and we have turned that around.

"Things are better and Congress is supporting us," he continued, "but there is a wrong perception out there [among the public]. But the facts will catch up. I believe the truth will prevail."

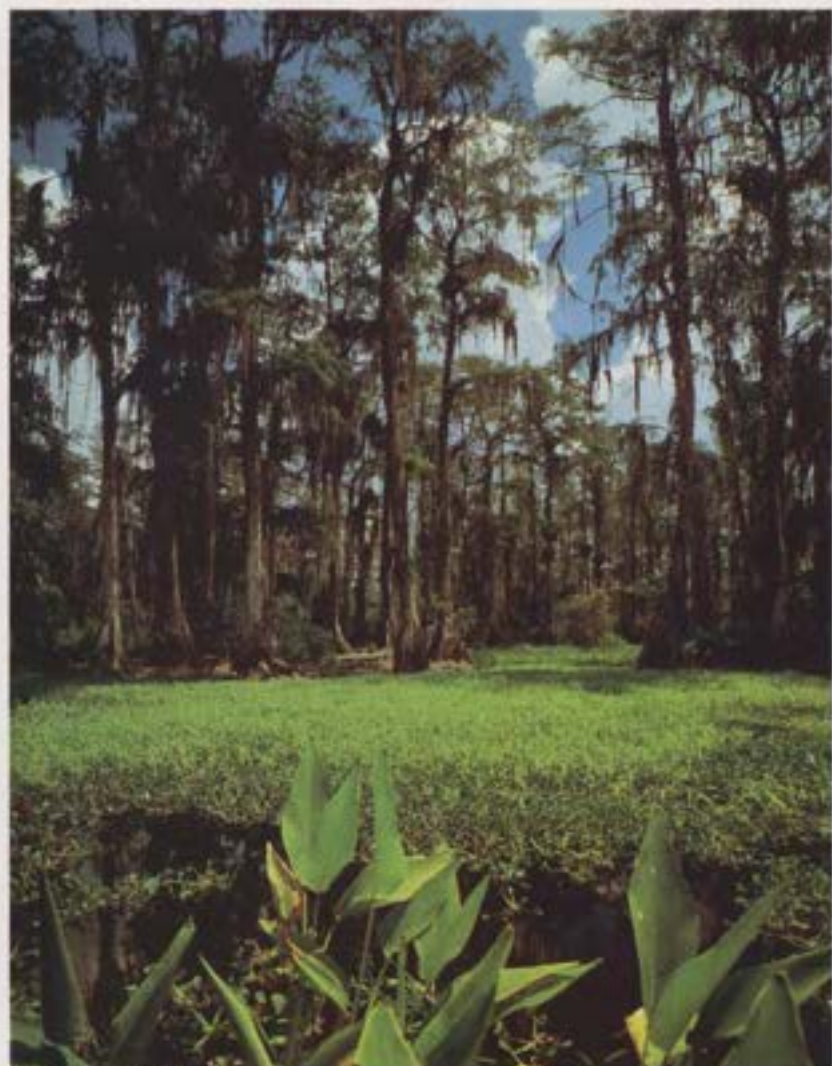
The truth, however, may produce a radically different picture than the one Watt has been painting. After lying low

## Offroad, Offshore Activities A Prime Threat to Coast Parks



*Our seashore parks face special threats. At Cape Hatteras (pictured) and at many other parks, off-road vehicles can severely damage fragile areas. Offshore oil activities pose*

*threats of spills and of visual pollution, already in evidence at Padre Island, Gulf Islands and Fort Jefferson. Natural processes, too, can do damage. On the East Coast, development has changed the natural movement of sand, resulting in erosion at some beaches and sand pile-up at others. At North Carolina's Cape Lookout National Seashore, for example, erosion of the beach has almost completely undermined the foundation of the historic lighthouse.*



*Everglades National Park*



*Glacier National Park*

*Yellowstone National Park*



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## Dangers Posed by Development Near Parkland Borders

*Although many parks offer access to great tracts of wilderness, no park exists in a vacuum, sealed away from the rest of the world. Even well-managed parks can be affected by activities that take place outside their borders, where park regulations do not apply. Proposed geothermal development near Yellowstone may harm the world-famous park's unique system of geysers and springs. Water-management problems outside Everglades National Park impact on the park's water-based ecosystem. Energy-development projects in Canada and in the U.S. threaten the water and air of Montana's Glacier National Park. Coal-development activities may have a serious effect on Bryce Canyon National Park in Utah, while the Four Corners and other power plants affect several parks in the Southwest. Perhaps most menacing is a nuclear-waste facility that has been proposed for a location quite near Utah's Canyonlands National Park.*

*These "outside" problems are the most serious ones faced by the parks.*



Canyonlands National Park



DAVID MURPHY

until the congressional elections were safely out of the way and his controversial statements would not lose votes for Republicans, he started early this year issuing press releases, making speeches throughout the country and appearing on television at every opportunity to push this new propaganda drive. Armed with selectively arranged charts and statistics, Watt has preached that his policies "have enhanced our environment, our economic future and our national security," citing his fixup of park facilities to make his point.

The secretary's figures got President Reagan into trouble recently when he used them as the basis for telling reporters that his administration is "spending more money on parks and acquisition of parks . . . than the previous administration spent in all its four years." The White House later was forced to admit that the President had been in error.

Representative Sidney Yates (D-Ill.), chairman of the House Appropriations Subcommittee on Interior, spoke in Congress about Watt's erroneous statistics in committee testimony. "Any resemblance of Mr. Watt's testimony to the truth . . . is purely coincidental," Yates said, adding that "the record shows that the national parks program has moved forward, not because of Secretary Watt's policies, but in spite of them."

Watt's claim of benefiting parks thus requires taking a look at what his policies are actually doing to the two components most vital to the health and longevity of the National Park System: 1) the unique ecosystems and the wildlife the parks are supposed to protect; and 2) the dedicated cadres of professionals in the National Park Service who are entrusted with the job of managing the park areas.

As to the first, Watt has virtually ignored the urgent need to address the thousands of threats to the parks' natural resources and has strongly opposed acquiring the land needed for completing the parks already authorized by Congress. As to the second, he is moving to put his ideological stamp on the Park Service by rewriting regulations and shifting the professional personnel.

### The National Park Service

After a slowdown in his original game plan for radical personnel shifts in the Park Service, Watt has now taken several actions to accomplish his stated plan of March 1981: to move career people quickly within the department. "If we do not get hold of the bureaucracy within the government by April 1, we will waste four years. And we're going to get hold of it."

In the past few months Watt has an-

nounced, as part of an overall mobility plan within the department, that he will transfer five of the 18 senior executive service people—those who hold top management positions in the Park Service. He has explained that the moves to other bureaus will enhance their careers. He issued a management-by-objective order to reduce Washington and regional office personnel 10% to 15% by moving staff people to parks or by abolishing unfilled positions. And he authorized reorganization of the Park Service hierarchy in Washington in such a way that its director, Russell E. Dickenson, is now almost surrounded by non-Park Service officials.

Last year Watt named a political appointee, Mary Lou Grier, who has no Park Service experience, to be co-deputy director of the Service. He also reduced Deputy Director Ira Hutchinson's rank to "co-deputy." Watt subsequently "enhanced Hutchinson's career" by creating a position in the secretary's office as liaison with black colleges.

The action leaves Grier as sole deputy director and potential successor to Dickenson. Grier had worked in 1976 and 1977 as deputy director and acting director of the Bureau of Outdoor Recreation before going back to Texas, where she became manager of the district office of Republican Representative Tom Loeffler.

Normally the deputy director and all associate and assistant directors in Washington have been career Park Service professionals. But in the new reorganization, only one of the 11 positions in Dickenson's "cabinet" is filled by a Park Service career person, and two of the others are occupied by Park Service people only on an acting basis.

The director of the Park Service reports to the Interior assistant secretary for Fish and Wildlife and Parks, who traditionally lets the director run the Park Service. Reagan's appointee, G. Ray Arnett, a former oil company geologist and California state director of Fish and Game when Reagan was governor, is philosophically opposed to strict preservation policies for national parks. He advocates allowing hunting and trapping in park areas where it is not forbidden by statute, and he supports efforts to open park areas to commercial fishing and to snowmobiles and other off-road vehicles.

Arnett rarely visits national park areas and shows little interest in or knowledge of the parks. For the past two years he has allowed a special assistant, Ric Davidge, to oversee the Park Service, and Davidge gives orders to Dickenson and involves himself with Park Service management.

Davidge came to Interior from the National Inholders Association, an organization that constantly battles the Park Service on behalf of people who own land within parks already authorized by Congress. Be-

fore that, Davidge had been an assistant to Alaska Senator Ted Stevens (R), who opposed the Alaska National Interest Lands Conservation Act.

The secretary publicly states that he always follows the advice of park professionals, but the actions of the Watt regime have led to the widespread perception among employees that the proud National Park Service has been politicized. Dickenson's freedom to operate somewhat independently, in the tradition followed by earlier Park Service overseers, has been curtailed.

The recent wholesale reorganization of top positions in Washington was conceived by Davidge and directed by Grier. Dickenson did not get involved until the basic concept was worked out, although he says it is his plan and he approves of it.

Early this year, Dickenson was ordered by superiors to find new positions outside Alaska for three career Park Service vet-

erans, Alaska Regional Director John Cook, Deputy Regional Director Douglas Warnock and Glacier Bay National Park Superintendent John Chapman. Cook was named superintendent of Great Smoky Mountains National Park—a clear demotion. Warnock was made superintendent of Redwood National Park. And Chapman was sent to the Denver regional office to become its chief of ranger services.

It was the first time in history that a regional director and his deputy had been transferred at the same time. And none of the three were given reasons for the move other than that they were for the "enhancement of their careers."

Word has leaked out, however, that the moves stem from complaints by Vern Wiggins, federal co-chairman of the Alaska Land Use Council and Watt's unofficial personal representative in Alaska, and by the Alaska congressional delegation, all Republicans. Chapman failed to lift restrictions

he had put on tour-boat use at Glacier Bay while a study was under way to determine why the humpback whale population was rapidly diminishing. As for Cook and Warnock, the word is that they were not responsive to demands by some Alaskans for more intensive use of park resources.

In a similar case of interference, while candidates were still being interviewed for the position of superintendent of Fire Island National Seashore, Arnett ordered Dickenson to give the job to a person who had actually never worked in a park. Dickenson protested on the grounds that longstanding Park Service regulations require that qualified applicants be screened by peers before a selection is made. Dickenson lost, and employees throughout the Park Service were shaken by the action's implications for career advancement.

The overruling of professionals, the reshuffling of personnel and the politicization of management have had a debilitating ef-



Olympic National Park

## Interior Blocks Land Acquisitions



Many parks are affected by problems involving land acquisition. Under the Reagan administration, the National Park Service has virtually called a halt to the acquisition of new parklands. This is especially important with regard to parks that have extensive inholdings. In Grand Teton



Grand Teton National Park

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fect on the National Park Service. Morale is at an all-time low.

"James Watt's attempts to restructure and reorganize the National Park Service must be viewed as a dangerous experiment," says Sierra Club director Edgar Wayburn, who is on the Secretary of the Interior's National Park System Advisory Board. "If these experiments fail, they may cause immense damage. The Service may take a decade or more to regain the professionalism it enjoys and for which it is renowned. Our national parks' resources will suffer incalculably."

## The National Park System

James Watt has repeatedly claimed that when he took office the national parks were in "shameful condition," having been neglected by the Carter administration. They were not neglected, as the millions of people who visit the parks can attest.

It is true that many park facilities—sewer

systems, roads, bridges, accommodations and concession buildings—were in dire need of repair. During the rapid expansion of the system in the 1960s and 1970s, past administrations and Congresses allocated insufficient funds to provide adequate upkeep of facilities.

Facilities, however, do not constitute the national parks. The heart of the parks is the scenery, the wildlife and the unique ecosystems for which the areas were set aside, to be left "unimpaired for the enjoyment of future generations," as the National Parks Act of 1916 requires. And those aspects—the natural resources—are facing serious troubles that may have grown even more serious since Watt took over. [*Problems exist throughout the system, but data on Alaskan parks is skimpy. See article on page 16 about current threats to parks in Alaska.*—Ed.]

Park Service Director Dickenson told me: "The major emphasis, both within and without the Service, has to be given to what is occurring in the natural resources arena. It's not visitor use, except for isolated instances, where we have the biggest problems."

Three years ago, the Park Service sent a startling study to Congress based on analyses of the parks' resources by their superintendents. The study outlined threats to the parks in 1980 that are even more ominous in 1983. The report described and listed 4,345 specific threats to park natural resources. Half the threats were inside the parks—soil erosion, air and water pollution, encroachment of non-native plant and animal species, visitor overuse, crime and vandalism. Many of the threats were outside park boundaries. Land development adjacent to park areas was threatening the natural resources in 132 park units; exploration for gas, oil, geothermal energy and hardrock minerals also posed severe dangers. Logging next to park areas was causing damage. And toxic chemicals and acid rain coming from outside the parks were affecting water quality in many areas; threats to air quality were evident at 140 park system units.

"There is no question but that these threats will continue to degrade and destroy irreplaceable park resources until such time as mitigation measures are implemented," concluded the report.

The report stated that three-quarters of the threats could not be documented for lack of research. Among 9,000 employees there were fewer than 100 scientists, and only 200 people with resource management training.

Despite its findings, the 1980 report provoked no immediate surge of action in Congress, or even in the Park Service, which was preoccupied with its constant struggle to meet growing visitation requirements and with budgets squeezed by national economic conditions.

In early 1981 Dickenson sent Congress a plan for mitigating some of the problems. It promised that parks would complete plans for managing resources, that training courses in resource management would be increased, 30 new fulltime resource management specialists would be hired, and systems would be set up for monitoring the health of species and ecosystems.

When Watt took office early in 1981, he was given the report, along with an October, 1980 study by the General Accounting Office. GAO's study noted that structures, water and sanitation systems, bridges and roads in the parks did not meet health and safety standards for protection of visitors. GAO estimated that \$1.6 billion would be needed to fix up facilities throughout the park system, an estimate Watt's own experts found \$1 billion too high.

The Park Service was told by budget officials that the secretary was planning to divert \$105 million from the Land and Water Conservation Fund, which pays for parkland acquisition, and that the money would be used to "restore" the national parks. The Park Service therefore was to submit proposals for spending the money. Most of it was to be applied to facilities improvement, but the parks would get \$5 million for restoring natural resources. This was to be part of a billion-dollar, three-year Park Restoration and Improvement Program.

Park Service regional directors went to Washington in February 1981 with lists of high-priority natural and cultural resource problems that had been identified by park superintendents. Thirty-eight natural and 66 cultural resource problems were selected as the most urgent, with first-year remedial price tags falling well within the designated budget. Included were such items as research on a declining population of humpback whales at Glacier Bay, removal of non-native goats from Haleakala, research to help grizzly bears survive at Yellowstone, prevention of wood theft at Petrified Forest, and protection of sand dunes at Cape Cod from destruction by offroad vehicles.

But none of the \$5 million promised for mitigation of natural-resource threats was allowed, because the money was not earmarked for restoring facilities. The cultural resource problems, however, got \$5 million per year for three years, plus an added \$5 million a year for cyclic maintenance of historic structures.

Watt's plan to divert money from the Land and Water Conservation Fund to use for park facilities was refused by Congress—which did, however, give Watt an additional \$76 million for his Park Restoration and Improvement Program. Dickenson maneuvered to get \$4 million added to the science budget, to provide for increased monitoring

*National Park, for example, inholders were willing to sell key properties to the federal government, but the purchases were not approved. Now some owners have threatened to subdivide their holdings for development. Some private lands within Olympic National Park should be purchased, but this too has been stalled by the Park Service. In other parks there have been attempts to redraw the boundaries to exclude key tracts.*



DAVID WILSON

of air quality and acid rain in some parks and for added research on natural resource problems.

## Current Problems in the Parks

While visiting national park areas, I found that no park, not even 111-year-old Yellowstone, had an adequate basic inventory of

plant and animal species, nor baseline data or monitoring systems to measure the health of the ecosystem. And everywhere there was deep concern for what might be happening to the resources. Most parks had neither the staff nor the funds to do studies that could reveal the true extent of their problems and then devise ways to correct them. And park staffs were virtually helpless to

deal with the external factors—such as adjacent mining, vacation homes, development, logging and air and water pollution—which are threatening park resources.

But I also found a few encouraging exceptions to the lack of adequate research and resource management capabilities.

Everglades National Park, in perhaps the most precarious position, has the largest

## Watt Tampers With Land and Water Conservation Fund

**I**N LINE WITH his declared intention to "use the budget system to be the excuse to make major policy decisions," James Watt has consistently prevented the purchase of privately owned lands to fill out the national park system. In doing so, he has refused to spend money specifically appropriated by Congress for that purpose. And he has put up special obstacles to completing such new national recreation areas as Santa Monica Mountains, Golden Gate and Chattahoochee. Congress established these NRAs primarily to meet recreation needs close to urban areas.

Many of the 334 units of the park system, especially those created since 1961, have contained large amounts of privately owned land. When the Reagan administration took office, the Park Service had identified 423,000 acres—about 10% of the private land within park boundaries—to be acquired at a cost of \$800 million. The money was to come from the Land and Water Conservation Fund (LWCF), monies for which come mostly from offshore-oil-lease revenues, and not from taxpayers' pockets.

The LWCF was established by Congress in 1965 to use some of the taxes gained from oil exploitation to acquire public lands. And Congress later provided that \$900 million be added to the fund every year to acquire land for federal park, wildlife refuge and forest areas, and to help states establish more parks. Over the past 16 years the fund has provided the money to purchase 1.7 million acres of land for the parks.

At his Senate confirmation hearing, Watt praised the fund—which he once administered as director of the Bureau of Outdoor Recreation—calling it "one of the most effective preservation and conservation programs in America." But a few weeks later, as secretary, Watt sang a different tune.

Although the LWCF kitty stood at over \$1 billion when he took office, Watt slapped a moratorium on all parkland acquisition and asked Congress to rescind and return to the U.S. Treasury \$80 million in unspent LWCF money that Congress had already appropriated for national parkland acquisition in fiscal 1981. He then cut the proposed Carter administration fiscal 1982 national parkland acquisition budget from \$234 million to \$29 million, which was to be used only for court awards. (When agreement cannot be reached on the selling price for private tracts within parks, or when owners refuse to sell, courts determine a fair market price.)

Watt considered deauthorizing some parks near urban areas. And he sent Congress proposed legislation to amend the LWCF

Act so he could divert some of its money to his park facilities improvement program. (Under the law, the federal government can use LWCF money *only* for land acquisition.)

"We must be stewards of what we have before we grab out for more," he proclaimed in one speech. "I do not believe the national park system should run urban parks," he said in another. He characterized urban parks such as Golden Gate and Gateway as "playgrounds [that] should be maintained by those that play in them . . . where there is the ranger pushing the kids in the swings."

Even in the budget-cutting euphoria of 1981, Congress refused to roll over for Watt. It refused to divert LWCF monies to park facilities improvement. And when Watt again zero-funded new land acquisitions for 1982 and 1983, Congress added \$106 million, as well as \$79 million for court awards.

Now Watt is enforcing several kinds of de facto moratoria to avoid buying new parkland. Permission to approve land transactions has been taken away from park professionals in the field and given to Assistant Secretary Arnett, who is rejecting many requests. Watt has ordered that most of the \$100 million in unspent monies Congress has appropriated for new acquisitions be set aside to use later if needed for court awards. And a new regulation adopted last summer requires that a "land protection plan" be developed or revised by each park and approved in Washington before any more land can be acquired. Not a single plan has been approved to date.

The concept of land-use planning is a valid one, one which the Park Service had started developing in 1979. With comprehensive planning, parks possibly can acquire some top-priority land by trade, by purchase of scenic easements or development rights, or by zoning actions, instead of buying land in full fee. Yet there was no urgent need for Watt to declare a moratorium while land plans were being developed and approved.

Watt's war against parkland acquisition may prove exceedingly harmful to the national park system. Although there are many owners who would rather retain their land within the parks, there are others who are eager to sell and, in fact, need to do so. With the Park Service now unwilling to buy, many of these people will take the only available alternative and sell their land to developers.

One of Watt's many opponents in Congress, Representative John Seiberling (D-Ohio), chairman of the House Interior Subcommittee on Public Lands & National Parks, claims that the secretary may be violating the Impoundment Control Act by refusing to spend the congressional appropriations for new parkland.

"Rather than saving money, you are simply driving up the ultimate cost of buying these lands," Seiberling told Watt at a recent hearing. "Rather than protecting the parks from degradation of their natural and cultural resources, you are permitting incompatible development. . . . And rather than preventing or relieving hardship for property owners, you are creating hardships for them." □

team of resource managers and research scientists of any park, and they are working to correct some of its problems.

Sequoia arranged for cooperative work from nearby college scientists, got science funds from the regional office, and "bootstrapped" an extensive basic research program related to solving natural-resource problems.

DAVID MCENICH

When starting the new Santa Monica Mountains National Recreation Area, the superintendent hired more permanent resource managers than rangers, developed an inventory of wildlife species and a program to monitor water quality and quantity in the area's 10 watersheds.

At most parks, however, I found that the threats to natural resources greatly out-

weigh the staffs' attempts to correct them.

• At Everglades, unnatural flood and drought conditions caused by regulating the normal water cycle to accommodate domestic, commercial and agricultural demands have caused a 90% decline in wading birds, and threaten the survival of alligators and other species. Also, large sections of the park are being overrun by nonnative plants

JOSEPH HOLMES



Shenandoah National Park

## Acid Rain

Acid rain has now been recognized as a nationwide problem, but it is most serious in the Midwest and in the East. It occurs when pollutants combine in the upper atmosphere to form acidic substances, which then return to the earth as precipitation. (Sources in the U.S. typically emit 50 million tons of such pollutants annually.) The parks of the Midwest and the East suffer the most damage from acid rain, which harms natural vegetation and kills fish in lakes and streams. This loss is especially notable in such parks as Shenandoah and Voyageurs, where fishing is a prime attraction. Even Acadia National Park, located on Maine's coast, is threatened by acid rain—as are the other parks of the Northeast and along the Canadian border in the eastern United States.



Acadia National Park

Voyageurs National Park



DAVID MCENICH

and trees, upsetting the ecosystem balance.

- Yellowstone listed 45 threats in the State of the Parks Report, two thirds coming from outside the park. Geothermal exploration, if allowed, could affect the continued existence of Old Faithful and other thermal features, and oil exploration, acid rain and other forms of air pollution, grazing, logging and homesite development all could endanger the survival of the grizzly bear and otherwise harm park resources.

- Within 50 yards of Lassen Volcanic National Park's most unique natural phenomenon, Terminal Geyser, a geothermal well was drilled on private property within the park, and 100 square yards of wilderness land were leveled by bulldozers before the federal government condemned and took over the land. Meantime, 57 companies have asked the Forest Service for geothermal lease permits on the park border, but so far all have been denied.

- At Sequoia National Park the majestic 2,000- to 3,000-year-old giant sequoia trees, largest of all living objects, are threatened because of human interference with the natural periodic fires that clear away underbrush. A fire now, after almost 100 years of protection, would be abnormally hot and could penetrate the big trees' fire-resistant bark. Although funds requested for "prescribed burning" as a preventive measure have been diverted to visitor-oriented priorities, Superintendent Boyd Evison has managed to keep up the minimal yearly schedule for prescribed burning.

Energy development on park borders or even within boundaries threatens almost every park area in the Southwest and Rocky Mountains regions. A nuclear waste depository is being considered within a mile of Canyonlands; an open-pit coal mine could mar key vistas and harm fragile rock formations at Bryce Canyon. And 37 applications for oil and gas leases within Glen Canyon National Recreation Area are pending, along with many other such matters that await Watt's decision, presenting him with a dichotomy of interests. While he vows to open up lands for energy development, he has said he would protect natural treasures within the national park system.

Although Watt has not yet taken major actions that would harm the parks, he has been almost totally derelict when parks are threatened by actions of other government agencies. He did not even dispute the untimely flooding of Everglades when federal and state agencies released water into the park this winter. He backed the administration's attempt to weaken the Clean Air Act with provisions that would allow increased pollution in national parks.

Park Service officials have been hard pressed, since Watt and Arnett took over, to

## Urban Sprawl at Blue/Gray Sites

*The Civil War battlefield sites are dedicated to the preservation of important parts of our nation's historical heritage; they supplement the parks that represent our natural heritage. What were once rural battlefields are today rare open space in urbanized areas. Such battlefield parks as Fredericksburg, Richmond, Petersburg, Antietam and Gettysburg are under heavy pressure from surrounding urban development. People want to use some parks for such disparate activities as concerts, "fun runs" and bike-a-thons. These are worthy activities, to be sure, but they're not in harmony with the purpose of these parks—preserving and commemorating battlefields of the Civil War.*



Gettysburg National Memorial Park

combat the efforts of special interest groups to relax traditional protections. Snowmobiles are now allowed in areas where previously forbidden. Ranchers seek extended grazing of livestock within some western parks, or ask for permission to enter parks to hunt down mountain lions suspected of killing their sheep. At Big Cypress National Preserve and at Everglades, hunting and commercial fishing advocates are pressuring Interior to revoke a scheduled ban on fishing and let airboats use a wilderness trail. Watt even asked a specially selected group of sportsmen's organization leaders to advise him on these two issues.

A February 1982 congressional hearing on what had been done about natural resource threats heard citizens from all parts of the nation testify about the real and immediate dangers to specific natural and cultural values and the low priority the Department of the Interior was giving to protection of the parks' resources. Citizens described threats to Glacier National Park from a proposed

open-pit coal mine in Canada, from acid rain, second-home development and gas and oil development on all sides of the park. They testified that Grand Canyon has 100 days of impaired visibility each year because of air pollution; that erosion and proposed energy development (coal, uranium, oil and gas, a haul railroad and a new town) threaten the survival of Chaco Cultural National Historical Park; and that there are many other threats to historical, archaeological and cultural areas.

When Watt testified later, his agenda of basic action priorities for the parks neglected any concern for protection of the natural resources from pressures of development. Instead, he listed the park system funding priorities as: 1) repairing sewer, water and road systems and historic buildings; 2) upgrading visitor services; 3) getting cooperation from neighbors of the parks, and 4) continuing the near-moratorium on parkland acquisition.

These hearings, together with appropri-





cies to consider adverse impacts their proposed developments could have on the parks before the development plans could be approved. The Senate, however, took no action, as the bill was bottled up in committee by the Republican leadership.

Director Dickenson says he is firmly committed to giving increased attention to resource management issues, and his field managers support such efforts. But neither the departmental funding priorities nor the Park Service staff capabilities are currently up to the job.

While dollars flow for facilities maintenance, competition is extremely stiff for the small amount available for research on threats to natural resources. Olympic National Park, for instance, has been unable to get funding to determine what may be happening to the endangered fisher and gray wolf, native species that may soon be extinct in the park. Nor are funds available for research to help stop the annual

washout of roads, although money is spent regularly to reconstruct these same roads each time they wash out. Yet Watt's facilities restoration program gave Olympic more than \$1 million to renovate a concessioner-run hot springs swimming pool, with a new changing room.

Back in Washington, bureaucratic confusion has hampered resource management and scientific research. The resource division had been transferred from the Science directorate to Operations three years ago, and its staff was cut just when it was given the added work of responding to the State of the Parks report. Now the new reorganization has shifted it back to Science.

Nevertheless, there has been some progress. When the plan to hire 30 experienced resource management specialists got stymied by departmental orders against creating new positions, regional directors and park superintendents contributed 37 vacant positions to be filled from the Park Service or other agencies. The people are

now in two years of on-site training to become park-resource-management specialists. The science program also is getting increased (although still inadequate) funding to research and monitor air pollution, acid rain and water quality, and to do other research related to park resource problems.

## The Most Urgent Needs

If the national park system is to continue to protect America's natural and cultural resources, certain urgent needs must be addressed:

- Increase funding and staffing for natural and cultural resource preservation.
- Establish systems to monitor changes in the parks, and make regular reports of threats to resources, along with long-range plans to deal with them.
- Increase scientific research in the parks and coordinate science programs with resource management.
- Acquire through purchase, or protect by other means, the private lands within national park boundaries that are necessary for protection and compatible use of the park resources; continue to use the Land and Water Conservation Fund for this.
- Restore Park Service interpretive programs that have been eliminated and ensure that programs communicate the true value of the parks and the threats they face.
- Determine carrying capacities of all units in the System and devise a process for preventing excessive use.
- Continue expansion of the national park system through establishment of units representing such distinctive features as prairie land, the Great Basin (primarily in Nevada), Mono Lake (California), and other geological, biological, archaeological and historical areas of national significance.
- Provide better protection from the impact of development or from other projects originating outside the parks.

While traveling through the parks, however, I have found a pervasive conviction among staff that the most immediate necessity is to return the running of the Park Service to the professionals. This usually translates into getting rid of the most unpopular Interior Secretary of all time, who boasts that he is "the chief ranger," but who has produced a siege mentality in the ranks. Signals travel fast in the tightly knit Park Service. The signal being heard today is that what happened to John Cook in Alaska can happen to anyone who refuses to bow to political pressure to exploit the parks. □

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tion hearings where Secretary Watt failed to convince members that threats to park resources were being addressed adequately, led Congress to take an unusual action. Over the objections of the administration, Congress added \$10 million to the fiscal 1983 Park Service budget for resources management and put language in the appropriation bill criticizing Watt: "This [added money] will permit the [Park] Service to focus attention on preservation of park cultural and natural resources—in many cases the reason a park was established—which the Secretary has ignored with his Park Restoration and Improvement Program."

Congressional dissatisfaction with Watt's stewardship of the national parks was also demonstrated last year in the House's passage, by a vote of 319 to 84, of the National Parks Protection Act, which had been opposed by Watt and the administration. The act would require the Park Service to report every two years on the state of the parks, and includes a provision to require federal agen-

Nineteenth-century Americans conceived of nature as purity itself—a representation of God's perfect goodness. In literature, the transcendentalists spoke often of the "moral influence" of nature, while in the visual arts, the cosmic aspect of wilderness was "depicted" by Durand, Bingham, Cole and others. Sunset in the Yosemite Valley (below), painted in 1868 by Albert Bierstadt, is a somewhat-later contribution to this tradition. It in no way proclaims itself an attempt at realism; yet the vivid hues of light reflected off low cloud cover will find a match in the sunset memories of many present-day visitors to the valley.



COURTESY OF THE WAGGIN MUSEUM, STOCKTON, CALIFORNIA

## DAVID DOUGLAS

**O**NE RAINY New Mexico afternoon, in an old adobe library surrounded by cottonwood trees, I came upon a rare find: a complete set of volumes from the Sierra Club's wilderness conferences. Even the dust jackets were intact.

I wandered for hours through the chronicles. It was all here in these "Federalist Papers" of the wilderness movement: What was wilderness? How should it be preserved? How much could be compromised?

One phrase kept catching my eye, not only for how frequently it was expressed by the participants, but for how seldom it is heard today: "the need to preserve wilderness for its spiritual values."

Few speakers troubled to define what these "spiritual values" were. They took it for granted that the audience, having sojournd in desert, mountain and forest,

knew firsthand what was meant: the silence and solitude afforded by backcountry; the sense of awe it inspired; the way it could alter a traveler's soul as much as his sinews.

No one accorded them more prominence than author and naturalist Sigurd Olson during the Club's 1961 Wilderness Conference:

*I am happy to talk about the spiritual values of wilderness because I feel they are all-important—the real reason for all the practical things we must do to save wilderness. In the last analysis, it is the spiritual values we are really fighting to preserve.*

In recent years, however, spiritual values seem to have fallen from the constellation of reasons to protect wilderness. Other traditional rationales—recreational, ecological, economic—have tended to displace the less measurable qualities of wild country with charts, visitor-use graphs and cost-benefit analyses.

"We must not be apologetic about our spiritual motivation," warned one participant during the 1953 conference, perhaps foreseeing that intangible values, gossamer-thin when compared to board feet of lumber, would be increasingly slighted in the trend to quantify wilderness.

Their eclipse is ironic, however, for it is spiritual values that have the capacity to galvanize the largest potential and untapped constituency on wilderness's behalf, one heretofore unmoved by arguments based on conservation or recreation: the religious community.

"They don't solicit us, we don't solicit them," explained one national Sierra Club leader recently, summarizing the role religious institutions have played in wilderness preservation. "They just haven't been involved in any identifiable way."

Such mutual indifference can be overcome, but it seems to me it will begin by environmentalists taking the first step, bringing to the attention of religious com-

# The Spirit of Wilderness & The Religious Community

munities, which seem to have forgotten the importance of wilderness, the quieter gifts of desert, mountain and forest:

● **SILENCE:** What draws people back to wild country? "Most of all was the silence and sense of removal," suggested Sigurd Olson during one wilderness conference. "These were spiritual dividends, hard to explain, impossible to evaluate, that brought them back time and again." But this "great primeval hush," which acts as an aesthetic balm, has often served as a theological bridge as well. Within the Judeo-Christian tradition alone—for Old Testament prophets, Desert Fathers and monastic orders—the silence of wilderness has been an invaluable catalyst for prayer and contemplation.

● **SOLITUDE:** Only by going alone, John Muir counseled, "can one truly get into the heart of wilderness." The isolation and seclusion found in wild country, merely a restorative tonic for some, has long kindled a sense of reverence in others. Wilderness solitude provided the common crucible for

Muhammed in a cave on Mt. Hira, for Buddha in the forests of northern India, for Jesus in the Judean desert during those 40 days and in withdrawals to desert and mountain throughout his ministry. It is "the most sublime state a human being can aspire to," proposes English author Malcolm Muggeridge, "being in the wilderness alone with God."

● **AWE:** Historian Wallace Stegner once chronicled wilderness as a source for the "birth of awe." The terrain, the un-shepherded wildlife, the sense of possible peril, all combine to overwhelm. "Our emphasis in wilderness," remarked naturalist Howard Zahniser, "should be our humility rather than our dominance." This quality of wild country can have a profound religious dimension, the Hebrews' 40-year wandering in the Sinai Desert being one epic example. By dissolving, on a daily basis, the hubris that separated humans from God, the wilderness provided an arena of reconciliation. Wild country has always served to remind people of their limits, and it remains—in contrast to manicured parks, gardens and other cultivated landscapes—the one setting that a sojourner is unable to claim as his own handiwork.

These spiritual values make wilderness a theological reservoir, an arena that can be at least as faith-nurturing as any sanctuary built of brick or steel. Perhaps more significant, it is just such qualities as awe, silence and solitude that have drained from the life of many religious institutions preoccupied with meetings, fund raising and administrative work. Wilderness provides one of the rare contemporary wellsprings for a restoration of contemplative values.

During a panel discussion at the Sierra Club's 1967 Wilderness Conference, one of the participants—a Unitarian minister—was asked why the church "doesn't get into this [wilderness preservation] battle all over the land and put its weight behind the whole effort?"

The minister replied that there was no reason why it could not; support could indeed be forthcoming.

But it hasn't happened. Some churches, stung by criticism from historian Lynn White and others who have blamed the Judeo-Christian tradition for the "ecologic crisis," have wrestled with their alleged culpability by focusing attention on a variety of environmental problems: pollution, pesticides, overpopulation. But seldom has their concern extended to wilderness.

Particularly from the pulpit, wilderness is evoked primarily as a metaphor, usually to describe a state of disorientation or despair, not as a living, life-restoring reality to pro-

tect for future generations. The oversight is not so much a matter of contempt—as though backcountry travel still hinted of dalliance with Pan—as of neglect: Wilderness simply has not been an element in the theological consciousness.

And this is where environmentalists can come in, challenging those clergy and their congregations unfamiliar with wilderness to discern its *breadth*—its importance as a reservoir not only for wildlife, natural cycles and genetic diversity, but for intangible bounties as well.

The environmentalists' burden, obviously, is not to provide some kind of ecclesiastical gloss: Religious communities have their own rich resources from which to fashion affirmative approaches to wilderness.

But it is not too much to expect those more familiar with backcountry's spiritual values to illuminate for others. In speaking of awe, silence and solitude, environmentalists will not only be speaking a common language with the religious community, but helping to recall the role played by wilderness throughout history in fostering reverence and humility.

This they could do in practical ways by speaking in houses of worship or addressing religious forums. Environmentalists who are also members of religious denominations could craft within their own spiritual traditions a vision of stewardship that includes wilderness.

A recent article in *Sierra* (September/October, 1982) explored possibilities for building coalitions; the authors pointed out the unlikely array of organizations that have already joined in specific environmental efforts: ranchers, labor unions, medical associations, civic organizations.

The account mentioned only secular groups. But the time has come to enlist others in the effort to preserve the few remaining islands of wild country. Wilderness will remain vulnerable to economic pressures until there evolves a far more broad-based acquaintance with its power to refresh the human spirit. Religious communities have a long-neglected role in helping to keep intact those places where, as David Brower has written, "the hand of God has not been obscured by the industry of man."

Wallace Stegner once sketched the untrammelled regions of desert, mountain and forest as "a part of the geography of hope." What should not be forgotten is that wilderness has always been, as well, a part of the geography of faith. □

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# DARKNESS AT NOON:

## *The Environmental Effects of Nuclear War* JOHN BIRKS

RECENTLY, MUCH ATTENTION has been devoted to determining what would happen to people in a nuclear war. An exchange between the United States and the Soviet Union involving fewer than one third of the nuclear weapons available in their arsenals would kill more than 750 million people outright and seriously injure 340 million more, according to a recent study by the Swedish journal *Ambio*. Additional millions would die from the latent effects of radiation and the spread of infectious diseases. Numerous symposia have been held in major cities by the Physicians for Social Responsibility and other groups to attempt to alert the public to the disastrous consequences of even a "limited" nuclear war, a prospect that has been discussed at high government levels. Since in the minds of many political and military leaders nuclear war is no longer equated with total annihilation, it is conceivable that a nuclear power would consider great loss of life and material an acceptable exchange for some political gain. The increased likelihood of the use of nuclear weapons makes an understanding of their immediate and long-term environmental consequences even more important.



A potent symbol of the atomic era is the clock logo of the Bulletin of the Atomic Scientists. The position of the minute hand serves as a visual expression—and a warning—of how closely humanity is approaching nuclear extinction.

The symbol was first used in 1947; the clock was set at seven minutes to midnight (primarily for esthetic reasons, according to the designer). Two years later, when the Soviets

exploded an atomic bomb, the hand moved up four minutes, to 11:56. In 1953, when they detonated a hydrogen device, the hand inched forward to 11:58, where it remained throughout the 1950s.

The hand moved backward, away from the very brink of extinction, twice in the years that followed: once after the enactment of the 1963 Test Ban Treaty, and again in 1972, when SALT I was ratified. Since then, however, the hand has moved only forward. It's currently fixed at four minutes to midnight, though in an era of "thinkable" nuclear war it may yet tick even closer.

### DIRECT EFFECTS OF NUCLEAR EXPLOSIONS

The immediate physical effects of a nuclear explosion result from nuclear radiation (neutrons and gamma rays), the blast or shock wave, and an intense pulse of thermal radiation, or heat.

If a nuclear explosion occurs at a high-enough altitude, the fireball will not touch the ground, and the radioactive material produced by the nuclear fission will be carried high into the atmosphere by the bomb cloud, resulting in little local fallout. But if a bomb explodes at ground level or at an altitude low enough for the fireball to reach the ground, huge quantities of earth and debris are sucked up into the fireball and mixed with the gaseous fission products. As the fireball cools, the radioactivity condenses on the debris particles. Gravity pulls these radioactive particles back to earth as fallout. Ground bursts or shallow subsurface bursts are the most damaging to missile silos because of the shock waves propagated in the earth. They are also the most lethal because of prompt nuclear radiation and delayed radiation from fallout. For example, nuclear radiation from a one-megaton atmospheric burst would kill trees in an area of 6.5 sq km and kill at least half the animal life in an area of 3.2 sq km; radiation from a ground burst would kill trees in a 130-sq-km area and at least half the animal life in 360 sq km. The Office of Technology Assessment predicts that the explosions in a nuclear war would be about equally divided between air bursts and ground bursts.

Suppose, for example, that a one-megaton nuclear warhead were exploded in the atmosphere over a forested area. The initial nuclear radiation would kill all vegetation within a radius of 1 km, all trees

within a radius of 1.4 km, and at least 50% of all wildlife within a radius of 1.9 km. The shock wave would blow down all trees within a radius of 6.7 km, and the falling trees and flying debris would kill additional wildlife.

The thermal pulse generated by the explosion would do the most killing, however. On a very clear day the intense heat would ignite dry vegetation such as leaves and pine needles everywhere within a radius of 10.3 km and would burn wildlife to death for a distance of 11.6 km—that is, everywhere within an area of 420 sq km. Effects would be reduced by about one third on a moderately clear day. Depending upon combustibles and weather conditions, the many fires started by the thermal pulse might coalesce and develop into a major forest fire, which would burn until stopped by natural causes, there being no personnel available for fighting forest fires in the aftermath of a nuclear war. (People who survive the initial effects of the war would undoubtedly be attending to the millions of injured or to their own needs for food and shelter.) Even if weather conditions at the time of the nuclear burst were to prevent the development of a major forest fire, the vegetation killed by nuclear radiation would in time provide an excellent source of fuel to begin a wildfire.

A one-megaton ground burst would produce a crater 300 meters in diameter and 65 meters deep. In most areas this would soon fill at least partially with water, forming a lake of poison deadly to any wildlife that drank there.

Furthermore, a ground burst would contaminate a large area with some 300 different radioactive isotopes. The size of the area would depend on weather conditions, but would average several hundred square miles. If it rains within the first few hours, the radioactive particles would be more rapidly removed and result in "hot spots," so that animals far from the site of the explosion could receive lethal doses of radiation from radioactive rain.

The radioactive isotopes deposited on plant surfaces and soil and in freshwater streams and lakes would enter the food chain, and their detrimental effects would be enhanced as they accumulated in plants and animals. Animals' bodies confuse strontium isotopes with calcium, and concentrate them in bone or in eggshells. The radioactive emissions destroy the highly radiosensitive stem cells of the bone marrow, and at sufficiently high levels stop production of platelets and blood cells and kill the animal. Animals receiving lower doses of radiation would succumb to bone cancer or leukemia. Strontium isotopes incorporated into eggshells would irradiate fetuses throughout their development, resulting in frequent mutations, most of which would be lethal. Cesium is chemically similar to potassium, so its radioactive isotope is concentrated in the soft tissues, including muscle. Radioactive iodine is accumulated by the thyroid glands of all vertebrates. Both isotopes would result in increased incidence of cancers and birth defects in animal populations.

This is what the detonation of one nuclear warhead would do. Multiply the extent of this damage by a factor of 10,000 or more to approximate the direct

effects of a major nuclear war. But this is not even the worst of the ecological damage to be expected.

## A DARKENED WORLD

The detonation of tens of thousands of nuclear weapons would ignite tens of thousands of mass fires in cities, industrial centers, gas and oil fields, fossil-fuel stockpiles, refineries, military installations, croplands and forests. Fires and firestorms caused a major portion of the damage to the cities of Hiroshima and Nagasaki. Detonation of nuclear weapons over gas and oil fields would result in numerous blowouts, and without expert personnel to extinguish the resulting fires these wells would burn as long as positive pressure remained.

Photosynthesis in plants would cease because sunlight would be blocked by the black smoke carried to high altitudes and by the hundreds of millions of tons of fine dust thrown into the atmosphere by surface bursts. Most of the phytoplankton and herbivorous zooplankton, the microscopic organisms that begin the food chain for all marine animal life, would die in the oceans of the northern hemisphere. Many scientists now agree that it is likely the noon-time sky would be as dark as a moonlit night for up to three or four months following a nuclear exchange. The surface of the earth would cool as most of the incoming solar heat was absorbed in the atmosphere, and the change in the temperature structure of the atmosphere would result in unpredictable changes in global weather.

A similar scenario is now the accepted explanation for the massive extinction of dinosaurs and many other plant and animal species 65 million years ago. The argument, based on geochemical studies, is that the collision of a 10-km-diameter asteroid with the earth resulted in the injection of large quantities of fine dust into the atmosphere, causing the darkening and cooling of the planet.

Animals and plants surviving the vast initial destruction of a nuclear war caused by the blast, heat and nuclear radiation would be subjected to three or four months of the nearly total absence of sunlight, with resulting freezing temperatures and extreme weather conditions. As the fires ceased to burn and the soot settled from the atmosphere, extremely high levels of solar ultraviolet radiation would begin to penetrate to the biosphere, doing additional damage to plant life and blinding terrestrial animals.

## REDUCTION OF THE OZONE LAYER

Although ozone is toxic to both plants and animals, its presence high in the atmosphere is essential to absorb biologically harmful ultraviolet radiation from the sun. In fact, the evolution of a protective ozone shield was a necessary condition for the appearance of terrestrial animals and plants.

Recent studies have shown that the huge quantities of nitric oxide injected into the atmosphere during a nuclear war could reduce the ozone shield's effectiveness against ultraviolet radiation in the

*"In weighing the fate of the earth, and with it our own fate, we stand before a mystery, and in tampering with the earth we tamper with a mystery."*

*Display quotes are from Jonathan Schell's The Fate of the Earth, New York: Alfred A. Knopf, 1982.*



higher stratosphere by as much as 50% to 70%, and increase ozone levels in the lower atmosphere, where it is toxic, to more than 160 parts per billion (about five times normal). The ozone increases in the lower atmosphere (troposphere) would kill plants and cause respiratory distress and disease in animals while only partly offsetting the large increases in solar ultraviolet radiation passing through the reduced ozone shield. In the worst of the nuclear war scenarios, levels of biologically effective ultraviolet radiation reaching the earth's surface would increase by 500% to 1000%. It would take about 10 years for the depleted ozone layer to return to normal.

Ultraviolet radiation is absorbed by the proteins and nucleic acids of

living cells, resulting in a variety of types of cell damage, including mutation. The phytoplankton living in the top few meters of ocean water have been found to be particularly sensitive, as are many higher plants. Fish are also sensitive. Scientists estimate that a 16% reduction in the ozone layer would kill up to half the anchovies in the top 10 meters of the clearest ocean water or else force them to go deeper. Although animals could protect themselves by avoiding the hazard, few species are thought to be able to sense ultraviolet radiation. The greatest damage to terrestrial animals would probably be blindness. Substantial reduction in the ozone layer would lead to cataracts within a very short time in all but nocturnal animals. Unable to find food, these blinded animals would die.

Long-term climatic changes are also a possible consequence of a major nuclear war. The deposition

*"A full-scale nuclear attack on the United States would devastate the environment on a scale unknown since early geological times."*

THE SUDDEN, DRAMATIC emergence of the nuclear-freeze movement in the United States in 1982 has made imperative a new relationship among the public, the so-called arms control "experts" and the government. Only if we understand this relationship more clearly than we have in the recent past can we avoid repeating old mistakes. Only if we can begin to develop a framework for genuine and sustained cooperation among the three groups—and end the tendency to view them as somehow antagonistic toward or independent of each other—can we hope to achieve our common objectives. Reducing stockpiles of nuclear weapons and preventing the holocaust of nuclear war call for a supreme act of national and international will. Any approach that serves to divide, rather than unite, these important constituencies will inevitably undermine progress in arms control.

The Senate's refusal to ratify the SALT II Treaty in 1979 was largely the result of two factors: public apathy and the failure of the arms-control community and the government—both the White House and Congress—to make an effective case to the public in support of ratification. The public's lack of interest in SALT II and its ignorance of the treaty's provisions left those hostile to the agreement

## FORMING COALITIONS FOR ARMS CONTROL

JOHN W. LEWIS and COIT D. BLACKER

free to generate substantial political opposition and to define the ratification debate in their own terms. The opponents of SALT also understood (better, it seems, than many of its supporters) that a critical number of senators could be convinced to vote against the treaty if there were no articulated public pressure to ratify it. In the end, the mere specter of SALT's defeat in the Senate compelled the Carter administration to request that the treaty be removed from the Senate calendar. Thus the lack of a coherent strategy for securing ratification of SALT II effectively doomed the agreement.

When the public, the "experts" and the government work together toward arms control, their achievements can be impressive. Two examples point up this fact. The Limited Test Ban Treaty of 1963 was concluded after bare-

ly six months of intensive discussions among American, British and Soviet negotiators. Three elements were at work—the commitment of the Kennedy administration to secure such an accord; the active involvement of technical and political "experts" from each country in a series of working groups on the nuclear-weapons testing that had begun in the late 1950s; and an aroused American and European public that was increasingly sensitive to the environmental effects of nuclear testing in the atmosphere. The 1972 treaty that limited U.S. and Soviet antiballistic missile (ABM) systems, perhaps the most important arms-control agreement ever concluded by the superpowers, was the direct result of lengthy and highly technical negotiations backed by an American public convinced of the agreement's importance.

What about disarmament



of soot from the many fires in cities, forests and oil and gas fields could cause polar snow and ice to melt.

Changes in the temperature structure of the atmosphere due to the injection of soot and dust and the reduction of the ozone layer could also affect climate. Geologists believe that throughout more than 99% of the history of the earth, there have been no polar ice caps. Thus, the present climatic situation could be considered abnormal, in which case an appropriate stimulus might cause a reversion to the more normal situation—the melting of the polar ice. Alternately, the earth could be plunged into a deeper ice age, such as existed about 20,000 years ago. Unfortunately, not enough is known about climatic change to make accurate predictions.

The consequences of nuclear war are almost too ghastly to imagine. The extinction of thousands of species, if not nearly all life forms, is within the realm

of possibility. Even *Homo sapiens*, the direct target of the nuclear attacks, could become extinct. Nuclear war is the ultimate environmental threat. Unless we solve this problem, all other work on environmental problems will be irrelevant. □

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*"In judging the effects of a [nuclear] holocaust . . . the issue is the habitability of the earth, and it is in this context, not in the direct slaughter of hundreds of millions of people . . . that the question of human survival arises."*

and more fundamental efforts to "change our thinking" on war and violence? Until recently, the transition from the goal of disarmament to the lesser objective of arms control was generally understood. The emphasis on arms control grew out of two decades of dashed hopes for "general and complete disarmament" following World War II. By the early 1960s it was clear that concrete steps were needed to manage the arms race and to control weapons buildup. The result was some 20 agreements—both U.S./Soviet and multi-lateral. There were accords to keep the arms race—both nuclear and conventional—out of some environments: the Antarctic and outer space, for example. Special efforts were made to limit the proliferation of nuclear weapons, to end their testing in the atmosphere and the seas, and to prevent their entering "nuclear free zones," such as Latin America. While the control of long-range nuclear weapons received the most attention, restraints also were imposed on biological weapons, on especially inhumane conventional weapons, and on any use of environmental modification for military purposes. Steps were taken to reduce U.S./Soviet tensions, including agreements on the "hotline," on measures to prevent the accidental use of nuclear weapons,

and on the prevention of nuclear war. While few would boast that there has been enough progress, most who know the facts consider that the world is a safer, saner place because of what has been accomplished.

Moreover, the ultimate goals of every agreement concluded since the early 1960s have been to end the nuclear arms race and *at least to initiate* progress toward general and complete disarmament. Arms control is not an end in itself. At best it is only a means to achieve the larger goal: disarmament.

Those who were trying to build the kind of world that could achieve the greater goal began to pull away from coalition with proponents of arms control during the SALT II debate. The number of deployed nuclear warheads had increased dramatically during the 1970s. This led some to the view that step-by-step efforts to control weapons and to manage crises were at best inadequate, at worst a smokescreen for future arms buildup. The facts that partisans of arms control enlisted the commitment of the defense community and that many defense specialists embraced arms control were taken as evidence of a kind of cynical collusion. There is no doubt that the linkage of arms control to issues of national defense and security can be mis-

used, just as its ties to disarmament can be misrepresented in the current polemics. The point is that moves toward arms control must be made in the context of ultimate disarmament and must help redefine defense and security policies in ways that reduce the probability of war.

All who share the vision of a safer and less heavily armed world must take the most rational and productive course possible. In our view, we must recognize the common nature as well as the deep moral roots of our concerns and accept the objective necessity for coordination and cooperation. What role can the citizen play in developing a sane national policy that combines security, arms control and disarmament? The most effective role to date, opposition to specific weapons programs or arms agreements, has made the public's involvement negative and episodic. For any coalition to be effective on this issue, it must adopt and sustain a more positive approach. Along with education, electoral action and rallying slogans—the ingredients of any effective public movement—a core of the most active citizens and public groups must go further if the coalition is to have a cumulative and lasting impact on government policy and negotiations. The Club's leadership in the environmental movement has forcefully

demonstrated that a long-range vision of what the future requires weighs equally with the ever-present need to thwart ignorant and destructive policies and actions.

In 1982 the Sierra Club board of directors moved to create a coalition for arms control and disarmament from within the Club's ranks. It established a Committee on War and the Environment, which includes people in the "expert" category and members of the public; two members of the committee have had recent direct experience in government. The committee includes defense-oriented, arms-control-oriented and disarmament-oriented individuals—truly a broad spectrum of political views.

We now must expand the small universe of the committee to include the entire Club membership. Local workshops and seminars are needed, both to nurture the coalition at the grassroots level and to extend the Club's role in persuading the public at large. The time has come to reassert the force of a national coalition for arms control and disarmament, to raise the torch and keep it burning. □

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# Flat-water touring and new designs and materials round out a whitewater sport.

BOB WOODWARD

**A**SK 100 KAYAKERS what they like best about their sport and you'll probably hear 100 different answers. Why? Because besides the highly publicized whitewater kayaking, the sport offers equally satisfying options such as ocean touring, river and lake touring and kayak surfing. In other words, kayaking offers enough variety to attract and hold a broad spectrum of people with different interests and physical capabilities.

And within each branch of the sport, you'll find a wide range of activities. Some whitewater kayakers, for instance, prefer to run only previously unrunnable rivers; others opt for playing on a single rapid or series of rapids close to an access road; still others search endlessly for the river of their dreams, the river where all natural elements combine to form their kayaking Shangri-La.

The sport of kayaking has a rich and varied history, as well. The Eskimos invented sealskin kayaks and used them for hunting and transportation. Certain Eskimo kayaks could accommodate a man, his family and all his worldly possessions.

The Eskimo kayak remained a novelty to be read about only in adventure books until 1907, when a German boat builder named Hans Klepper brought out his own version of the native craft. Slightly shorter than an Eskimo boat, Klepper's design used canvas instead of sealskin, stretched taut over a wooden frame. The resulting "Foldboat" was light and rigid, but best of all it could be dismantled for easy storage and transport.

The Foldboat introduced river and lake touring to Europe. In time, kayak enthusiasts began holding competitions in flat- and whitewater racing throughout Europe. As

the competitions grew, they gave rise to new design and construction ideas.

Most of the new ideas only improved on the basic foldboat design. Then, in the 1950s, manufacturers (including Klepper's boat works) started using fiberglass in kayak construction. Molding a deck and a hull and then joining them together made kayaks more durable, lighter, and even easier to handle in rough water.

The introduction of fiberglass as a construction material brought a new surge of interest in kayaking on both sides of the Atlantic. While competitive kayaking continued to grow in Europe, Americans seemed more attracted to recreational whitewater kayaking. The Europeans ran slalom courses and raced down rivers; Americans headed out to paddle all the rivers they could, to navigate long rivers and lakes in the contiguous states, Alaska, Canada and the Yukon, and soon even to surf the waves off beaches from California to Rhode Island.

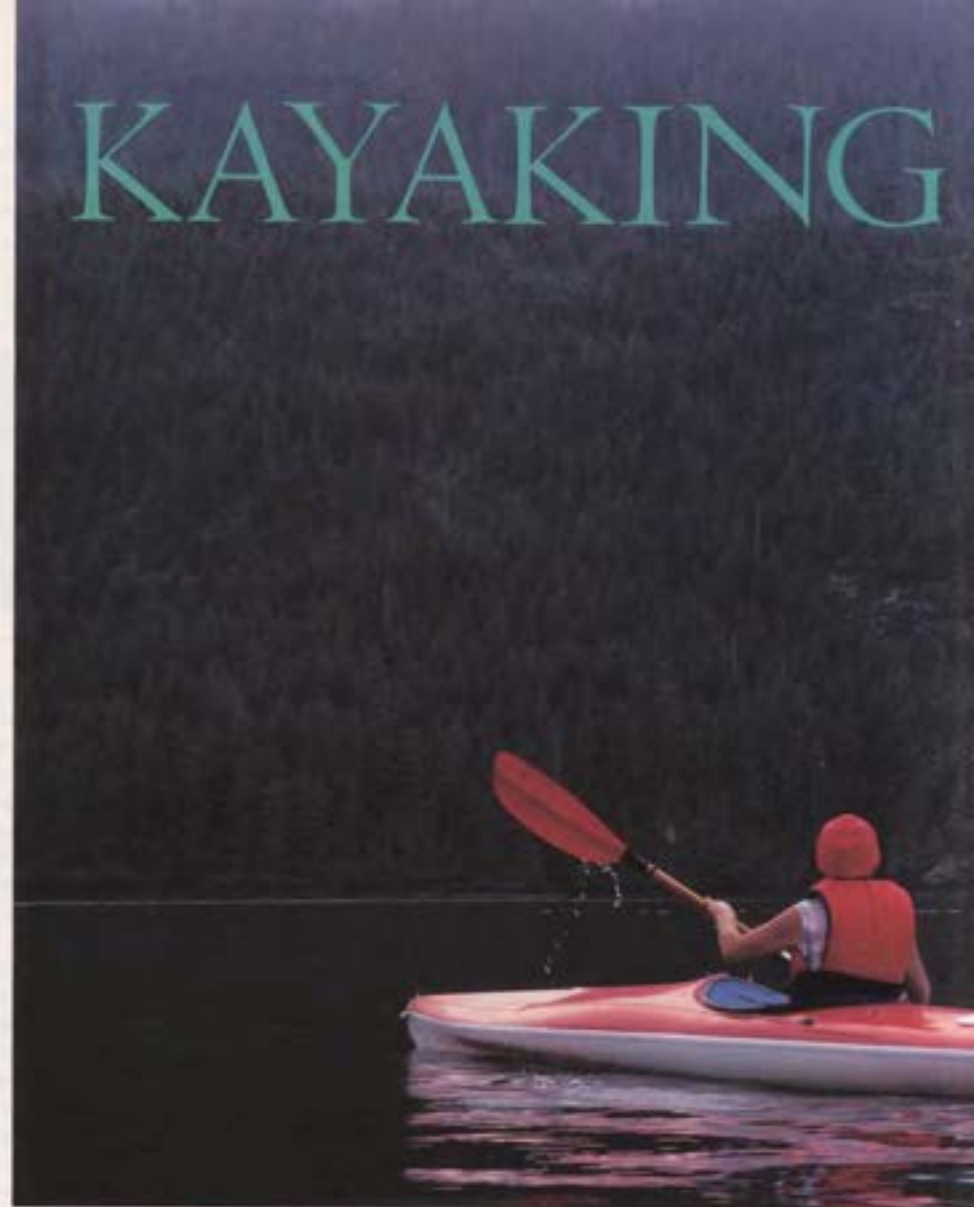
When Dartmouth College administrator

Jay Evans received the first Klepper fiberglass kayak delivered in the United States in 1960, a great era of whitewater kayaking began in America. As in every new sport, there were great challenges and larger-than-life legends, such as Walt Blackadar, a Salmon, Idaho, surgeon who took up kayaking when in his forties. In the manner of a true Hemingway hero, Blackadar tackled the most difficult and dangerous rivers here and abroad before he died—on a river he had run many times before not far from his home.

Interest peaked in the mid-1970s, after the 1972 Summer Olympics, which included kayaking and canoeing events. Ever open to popular trends, television producers found wild-river running a perfect addition to their Sunday-afternoon outdoor shows. Then, in the late 1970s, interest in the sport waned somewhat.

The 1980s dawned brightly for kayaking, and not just because more people became participants. Using polyethylene, a company called Hollowform devised a method

# KAYAKING







*A kayaker (left) in British Columbia's Johnstone Strait glides close enough in his low-profile craft to observe a spouting pair of killer whales. Two members of the Aisek Expedition (below) maneuver through the ice floes at Lowell Glacier.*



© BOB LESSER



KEITH GUNNAR

of rotationally molding virtually undamagable kayak shells. The first of these, brought out in the 1970s, were flawed in design and performance, but with new molds and refined designs by experienced kayaker Tom Johnson, the sport achieved another leap forward. Suddenly, the kayaker who cringed at every contact with a rock, who treated his boat as though it were his offspring and who spent hours on the river or at home patching holes after each trip had a kayak that could take a beating and come back for more. Even so, kayaking purists, mostly racers, damned the "polyboats" as being too heavy and clumsy to handle. But for polyboat users, the trouble-free maintenance was worth the few pounds of added weight. And with less maintenance has come, predictably, more interest—not only in whitewater kayaking, but in ocean and river touring.

Currently the fastest-growing segment of the sport, ocean kayaking requires a longer craft (17 to 19 feet versus 13 feet) that has a broad, stable hull accented by sharp bow

and stern sections. Sold in one- and two-person models, oceangoing boats have lots of room inside to store camping gear and provisions.

Unlike whitewater kayaking, which can take considerable time and effort to master, ocean touring can be grasped quickly. In just a few practice sessions, a novice should be ready for a guided group trip.

The most popular ocean-touring areas today include Washington state (especially near Seattle), British Columbia and Maine, where groups island-hop on weekends or take extended trips along stretches of coastline. Pockets of ocean tourers regularly ply the coastal waters of South Carolina as well as the Gulf of Mexico near Texas and Louisiana. Last year, several southern California groups toured both Mexican coasts.

Ocean kayakers like to extoll their sport as a perfect combination of separate yet equally important skills. Many veteran oceangoers are or were experienced backpackers, who rely on their wilderness survival and camping knowledge as much as

their newfound paddling skills on each trip.

Similar techniques come into play in river and lake touring, until only recently an overlooked aspect of kayaking. People now realize that if they can paddle around on salt water in a large kayak, they can use a similar craft for calm rivers and lakes.

Good river and lake kayaks resemble ocean boats in basic design, but are three to four feet shorter and built to move easily through the water.

To Americans brought up with canoeing as part of their heritage, river and lake touring in a kayak seems an anomaly. Author John McPhee put it best when he said that every American male thinks he is born with the innate ability to paddle a canoe. Why paddle a kayak when you can sit up proud and erect like a latter-day Hiawatha? The answer: that swift, low profile on the water.

The speed of kayaking, especially compared to canoeing, became evident to me on a trip I took with two friends around the Bowron Lakes area of Canada several years ago. Besides moving faster, a kayak travels much less visibly, and with less noise than a canoe can generally manage.

My friends came to photograph game, birds, fish and the celebrated fall colors. They did well on the foliage, but they were too often sighted by wary game and birds before they were in camera range—in part, I'm certain, because of the high profile of their canoe. I, on the other hand, suffered no such problem; in the kayak I crept in closely for good photos and, more often than not, was discovered only when I was too close to my subject for my own good.

Our last morning on the lakes dawned

thick with low-lying fog. We put into a twisting feeder stream that led from a boggy lake to the last lake of our trip. I fell into a fog-shrouded philosophical reverie as I slipped over the cool, glassy surface. Approaching a wide arcing turn in the river, I suddenly heard a tremendous splash and a strange

whirring sound. Perhaps what we had been dreading the whole trip was about to occur—an encounter with a marauding grizzly.

I brought my paddle out of the water noiselessly and began to drift around the turn; all the while the thrashing sound continued. Then, not more than 40 feet away, I

KEITH GUNNAR



*The use of fiberglass and polyethylene as materials for kayak construction has both improved durability and simplified maintenance of these versatile craft. Two-person kayaks (above) are relatively easy to handle, while for exhilarating whitewater thrills, you're on your own—after considerable training and a few spills—in a solo model (below).*

© BOB LESNER



saw an enormous bald eagle wrestling with a large adult salmon. As the kayak drifted closer, the eagle finished his kill and began tearing into the fish, dividing it up for easier hauling to his aerie.

The kayak drifted to within 20 feet of the eagle. The bird's intensity over his kill had temporarily blinded him to normal dangers. Not knowing how eagles react to sudden surprises, I grew knee-knocking scared. Then my friends in the canoe came round the bend behind me. Their bulk startled the bird into flight, and as the eagle rose slowly, I'm sure I saw him shoot a glance my way, as if to wonder how I managed to sneak in so close.

Whereas the calm, serene pastime of lake touring may bring surprise encounters like mine, whitewater kayaking offers galvanizing challenges of another order. Whitewater is the most demanding realm of the sport. Proficiency comes slowly, requiring hours of work on the Eskimo roll, inevitable dunkings—sometimes embarrassingly close to shore—and a rush of panic on confronting rapids for the first time. As in karate, you

## What You Need to Get Started

**WHITEWATER:** Kayak, float bags for added buoyancy, spray deck to seal the cockpit area, life jacket, helmet, paddle. Optional gear: wet suit, paddle jacket and sweater. Total cost: between \$900 and \$1,000.

Whitewater kayaks (slalom models) are normally 13 feet long, with hulls that are rounded under the cockpit area and curved up slightly at the bow and stern for better maneuverability. A few manufacturers now build shorter (12-foot) kayaks for young or short people, or for those more interested in high maneuverability; these boats are also more suitable for intermediate and advanced paddlers than for beginners.

**OCEAN TOURING:** Eliminate the helmet (not needed for ocean travel), but all the other pieces of equipment listed in the whitewater section apply here. If you buy a single-person ocean-touring kayak, your gear will cost about \$900. If you opt for a two-person model (unique to ocean kayaks), expect to pay about \$1,500 for all your initial needs.

must progress through successive levels of skill to achieve a comfortable mastery of the sport.

Despite some appearances—heed not all the images of Sunday TV—the best white-water boater relies more on intelligence than on macho brawn; a kayaker who goes with the flow of a river rather than trying to dominate it is bound to succeed.

In a natural progression, the novice kayaker gains experience and expertise by running increasingly demanding rivers. Expert paddler John Wasson once told me how he first approached the wild and scenic section of the Rogue River with such fear that he almost turned around and went home. Years later, he can run that section of the river half-asleep, but he still appreciates its beauty and the significant place it has in many a kayaker's heart.

Like others before him, Wasson gradually tackled harder rivers, demanding the most of himself mentally and physically. Most whitewater kayakers hone their skills with a goal in mind: one day to run "Widow Maker," "Death Rock," and "Savage Rapid"—

all the nasty-sounding rapids on fabled rivers. They want to go beyond the class IV rapids to the class Vs—those regarded as for experts only. Beyond these are the unrunnable, stretches of whitewater so intense that to attempt them is to jeopardize life and limb. At this juncture, most kayakers back off to take a look at themselves and their sport.

Deciding not to run the biggest waves, rapids or falls often signals a coming maturity. Now the kayaker can concentrate on playing with the river, using the river's energy to advantage; learning to surf in front of a big wave, or to ferry from eddy to eddy with lightning speed; learning what strokes will free the kayak from the water's deadly sucking action; or getting to know the spot in a river where the water's action will send a kayak skyward in an "ender."

To become more than a daredevil, a kayaker must learn to appreciate his surroundings. A river is more than just whitewater: It's also an historical spot, a place in an area's geological makeup, a home to fish, game, birds and plants.

When all of these elements find their proper perspective in a kayaker's mind, he may just come to the river of a lifetime: full of clear, cool water amid breathtaking scenery, abundant wildlife along its banks, perhaps with a hot spring to bathe in, and playful rapids that make you feel you're dancing your kayak effortlessly along the surface.

By the same token, ocean, river and lake touring kayakers can also find their ideal experiences: gliding across a mirror-like Canadian lake, watching the bow cut cleanly through the water; or perhaps strolling undisturbed on the beach of a deserted island far from the jet-age pace of the workaday world. In either case, the lapping of the water against the shore, the rhythmic paddle strokes and the evenings spent by a driftwood fire bring a special form of pleasure and peace—the rewards of a sport that has something for everyone. □

*Writer/photographer Bob Woodward has written two books on cross-country skiing. Other work has appeared in Outside, Powder and Running.*

Ocean-touring kayaks range in size from 17 to 19 feet and weigh in the 40- to 50-pound range. Typical whitewater kayaks weigh 25 to 35 pounds (fiberglass) or 35 to 45 pounds (polyethylene).

**RIVER & LAKE TOURING:** As for ocean touring, you'll need all the essentials except the helmet. Expect to pay between \$900 and \$1,000 for better-quality equipment packages.

A typical river-touring kayak is 14 feet long, is made of fiberglass and weighs 35 pounds.

**LIFE JACKETS:** Buy the foam-filled, nylon vest type with a waist belt. These are designed specifically for kayaking and canoeing. They fit securely in white-water, provide protection from rocks and cold, allow freedom of movement, and supply at least 15.5 pounds of buoyancy. Avoid the less expensive and less effective "horse collar"-type personal flotation devices. Some "big water" boaters prefer special jackets with 20 or 25 pounds of buoyancy—more than enough for beginners.

**HELMETS:** Opt for a helmet with full ear and temple protection and a good interior foam-padding system. Typical bicycle, climbing and skateboard helmets are not adequate.

**PADDLES:** Virtually all kayakers use a feathered paddle (blades offset 90 degrees). Start with the basic type that has an aluminum shaft and flat blades. Later, you can swap with friends to test the claimed advantages of all-wood or fiberglass shafts, or of curved or spooned blades (note that paddles with these types of blades come in right- and left-handed models).

**CLOTHING:** What you need to wear varies with the season, water temperature and climate. Basically, however, staying warm means retaining body heat while keeping cold and water out. For taking on rivers in the Northeast, definitely wear a full neoprene-foam thermal suit with neoprene socks and gloves. In California some boaters get by with just an eighth-inch neoprene short suit. Some outfitters recommend Gore-Tex or nylon-coated paddle jackets, but others question their real worth. A basic garment for both kayaking and canoeing is the waterproof paddling jacket. An old sweater comes in handy, too, when you don't need the neoprene—or when you need something to add to it.

**CARRIERS:** Having invested in a kayak, you'll want to give some thought to how to carry it about. There are specialized roof racks that can be adapted

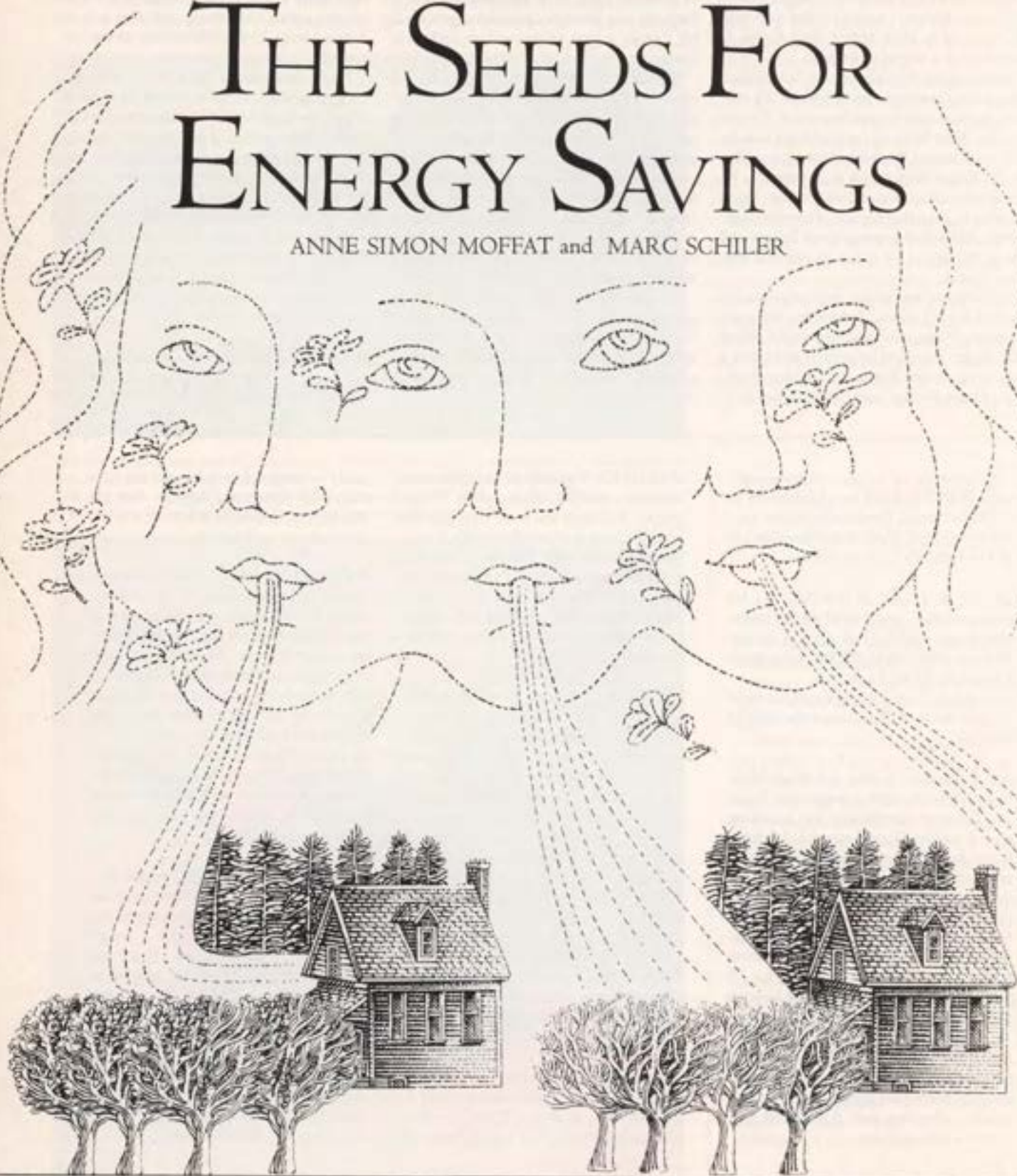
easily to carry not only kayaks but bicycles, wind surfers and luggage. You can also build your own rack out of 2 x 4s and gutter clamps specially designed for cars.

**WHERE TO LEARN:** There are kayak schools in every section of the country. Check with a reliable whitewater shop or kayak manufacturer for information on the better schools. Some Sierra Club chapters have river-touring sections that offer not only basic instruction, but river trips where one can progress with more experienced people—the safest way to run rivers. There are also a large number of other paddling clubs throughout the country associated with the American Whitewater Affiliation or the American Canoe Association.

**WHERE TO BUY:** While major boat shops may carry several of the items mentioned, the sport is decidedly regional. First check with a local club to see if it offers other activities in your chosen specialty; then inquire about equipment, recommended shops, club entrepreneurs, and the availability of used equipment. Certain clubs participate in all the aforementioned activities to some degree, using conventional whitewater equipment. In clubs that specialize, you could be seriously handicapped without the recommended equipment. □

# SOWING THE SEEDS FOR ENERGY SAVINGS

ANNE SIMON MOFFAT and MARC SCHILER



*Parallel rows of trees act like a funnel to steer prevailing summer breezes through open doors and windows to help lower cooling costs. In winter, evergreens upwind of the house deflect icy blasts harmlessly away, while deciduous trees downwind, their leaves fallen, let the wind through instead of channeling it toward the house.*

**T**HE ART OF LANDSCAPING, of sculpting the earth and the plants that grow on it, has a utilitarian side, offering us a powerful means of conserving energy in our homes. Besides adding beauty to our surroundings and delighting our eyes, trees, plants and shrubs provide shelter from sun, snow, wind and rain. In fact, intelligent, energy-minded landscaping can reduce by up to 30% your home's energy needs for space heating and cooling.

Despite meager resources, early societies designed habitats that successfully met the challenges of the severest climates, often using simple landscape designs to provide protection from the weather. Unfortunately, much of today's architecture disregards climatic cause and effect. Until the 1970s, its inefficiencies were masked by cheap fuel; now we realize we must make existing homes more responsive to local climate, and build new homes to be as efficient as possible. We can do this by reevaluating the housebuilding traditions of earlier, less wasteful societies and adapting them to today's needs. This summer, as you plant your garden and make landscape plans for the

future, consider some of the following time-tested strategies for saving energy.

Trees, shrubs, vines and ground covers—especially those with dense foliage—can provide an excellent defense against the summer's blazing sun and overheated living areas, both indoors and out. Plants are living air conditioners: Like their mechanical counterparts, they evaporate water and cool the air. In addition, they cool and enhance refreshing breezes.

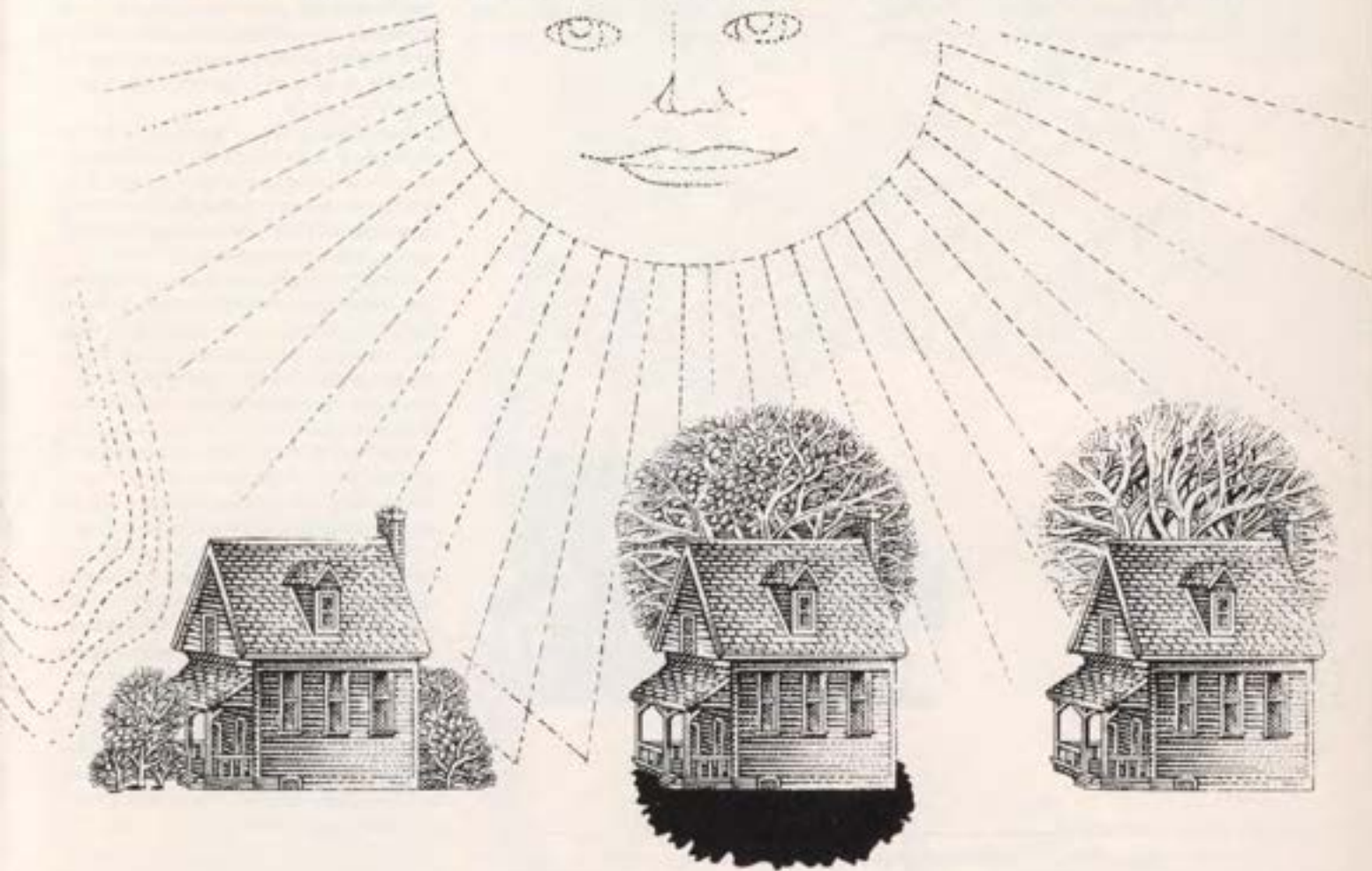
The various ways in which water, plants and air exchange energy can be manipulated to improve the climate and comfort of your home. Plants modulate the environment by absorbing sunlight, casting shadows and cutting glare, thereby cooling walls, windows, roofs and outdoor decks and patios. And much of the radiant energy plants capture helps evaporate their water content. As a result, humidity is increased, which keeps temperatures cool and stable. It is no coincidence that the most pleasant—and renowned—gardens use pools, falls, fountains and other bodies of water in their designs. They add physical comfort to the beauty of the garden by absorbing the sun's heat more efficiently than earth does, and by re-

radiating far less of that heat into the air.

Of all planting strategies, putting in vines offers the fastest and cheapest relief from blazing summer heat. Three or four inexpensive, fast-growing vines such as clematis, morning glory, Virginia creeper or bougainvillea planted in the spring can provide ample shade by midsummer. When trained to climb a trellis, arbor or veranda, they shade outdoor living areas and screen sunlight coming through windows. In addition, vines growing up a west-facing wall will offer a pocket of insulating air that will guard against excessive heat buildup created by the low, late-afternoon summer sun.

Carefully trained vines can also save energy by shading air conditioners; the metal frames retain enormous amounts of heat, putting added strain on the machinery and making them work less efficiently at more expense to you.

Vines must be selected with care, because some, such as kudzu, grow too fast, while others may damage building materials. Ivy cultivars that have tiny rootlets, such as English ivy, provide good cover for brick or masonry walls, but make poor selections for guiding up wood structures. They're hard to



*Low-growing shrubs and trees close to the house insulate against draft-inducing winds and late-afternoon sun.*

*In summer, the dense foliage of a deciduous tree will cast a cooling shadow over your home. In winter, the leafless tree lets sunlight through its branches, allowing you to rely on passive solar heating.*

train and, once established, even more difficult to dislodge. They may even tear out shingles. Consult your local nursery or agricultural-extension agent to determine which vines are best suited to your climate and home.

Earth-hugging plants or ground covers also control temperatures around homes. Grass, pachysandra and low-growing vines can transform a heat-retaining yard into a cool refuge. Ground covers such as these throw cooling shade, draw heat out and away from the earth, and reduce heat reflected from buildings. In contrast, concrete, asphalt, stone and bare earth accentuate heat by reflecting it. Air temperatures over grass are typically at least 10 degrees lower than over adjacent asphalt, hard-packed earth or concrete surfaces.

Although grass is the least expensive ground cover to get going, and therefore most often a homeowner's first choice, it unfortunately requires frequent fertilizing, watering and mowing. Other ground covers, including creeping and carpet junipers, myrtle and sedum, are nearly as effective as grass but need far less maintenance. Low-growing junipers, for instance, cost more to establish, but often require only yearly weeding, feeding and trimming to keep them healthy.

Of all plant forms, trees and shrubs offer the greatest potential for controlling heat, and although they also cost the most and can take several years to mature, they offer a guaranteed return on your investment. Unlike air conditioning and other mechanical temperature controls, trees and shrubs produce increased efficiency with advancing age. An average, full-size deciduous tree, such as a Norway maple, can dissipate as much heat as five 10,000-BTU air conditioners. Of course the tree, planted in the great outdoors, will not have the cooling effect of air conditioners in confined spaces. But the tree's foliage can screen 90% of the sun's rays, making the shaded area beneath it as much as 20 degrees cooler than the surrounding, unshaded yard. Moreover, the sunlight that trees intercept rarely reradiates as it would from a wall, awning, screen or other shading device.

Trees used for sunscreens should be planted to temper the heat of the summer sun, which rises to the north of east, passes south and almost overhead at midday, and sets north of west. Place low-growing trees and shrubs with light canopies close to the northeast side of the house to filter early-morning light. Avoid planting species with invasive root systems, such as willows, too

close to foundations or drainage tiles. Plant tall, dense trees such as maple and beech close to the south face of the house. Such species screen the hot, midday sun more effectively than closed blinds.

Deciduous trees planted close to the house shade the sun in summer, then drop their leaves to let in solar warmth during winter. Low trees or shrubs make valuable sunscreens when planted to the west and northwest; they supply shade at dusk when the summer sun sits low in the western sky and heats west-facing walls and windows. In addition to offering shade, funnel-shaped rows of well-placed trees, shrubs and hedges can guide prevailing cool breezes toward living areas, to help dissipate both heat and humidity.

When developing an energy-efficient landscaping plan, remember that groups of trees can serve as effective windbreaks, cutting indoor heat loss in winter and thus further reducing a home's energy consumption. The quality of a windbreak depends on its penetrability, height and width. A dense windbreak produces a marked calming effect immediately downwind, but provides only short-range protection. By contrast, a thin windbreak gives more modest wind reduction, but extends the protection further. In general, wind speed is reduced for a distance of up to 15 times the height of the barrier downwind.

Evergreens with uniform density throughout their height provide the most effective year-round wind control, although you can create a very good buffer by planting mixed species of trees to produce foliage of varying density throughout.

If you live in a snowy climate, remember that low wind velocities downwind from a barrier encourage snow to settle on that side, creating potentially large snowdrifts. For that reason, avoid locating a windbreak upwind of and immediately adjacent to a drive or walkway.

Small windbreaks, such as plantings of yew and privet close around a foundation, can also help reduce heat loss by providing a pocket of insulating air around the house.

Although saving fuel and money may be your main reason for trying energy-saving landscape designs, you get other benefits too. Unlike air conditioning, heat pumps, and solar-heating devices, plants require little skilled upkeep. Their timing and resetting is done by nature—not by hand. They add no thermal pollution, and they're a joy to plant and nourish. And unlike mechanical equipment, an investment in energy-efficient landscape design offers a gift of beauty to future generations. □

Anne Simon Moffat and Marc Schiler are co-authors of *Landscape Design That Saves Energy*, published this year by William Morrow.



Deciduous vines provide a fast-growing way to create shade. Trained over trellises or arbors on the south and west sides of a house, they can help cool the dwelling's interior in summer without obstructing the warming rays of the winter sun. They also form a shady outdoor retreat for summertime enjoyment.

**E**VEN THOUGH the nation is rich in famous long-distance hikers such as John Muir and Henry David Thoreau, there's no telling who wears the mantle as the patriarch of marathon hiking. But with the increasing popularity of the major national scenic trails—the Appalachian, the Pacific Crest and the Continental Divide—the banner is currently carried by a rapidly growing number of wilderness wanderers who take to the backcountry for weeks or months at a time. Explorer Eric Shipton once commented that no expedition should require more than half an hour's planning on the back of an envelope. Most backpackers, however, have no frame of reference for looking at a long-term outing. While hiking the Pacific Crest Trail in 1977, I was struck by the whimsy and innocence that seemed to guide so many of my fellow trekkers: the 100-pound pack, the 25-miles-per-day pace, the summery wardrobe that took no account of the mountains' potential for winter in July.

Common sense and some backpacking experience will see you through most of the events that occur during a long-distance hike. But the level of your enjoyment and the depth of your experience may very well be determined before you take your first step on the trail. Here are some planning tips to help you get off on the right foot.

## KEEPING YOURSELF RESUPPLIED

Three methods are commonly used for restocking your larder on the trail: establishing caches at points along the trail, shopping at markets convenient to the trail, and having supplies periodically delivered to you. Caching supplies may be feasible if your trip is short enough to allow quick access to points along your entire route. However, the time you invest driving the route and finding local people to hold your goods can be excessive. Also, if you plan trailside caches, you risk forgetting where you put them or having them looted by wildlife or other travelers.

A more common practice is to buy food as you go. Along most backcountry routes, however, the nearby hamlets are often no more than fishing or ski resorts, their groceries carrying little more than snack foods and canned goods.

Having your supplies mailed to you, c/o general delivery, allows you the greatest control over what you eat. Some trail guides—the Wilderness Press guide to the Pacific Crest Trail, for example—even identify the most accessible postal points. Mailing your supplies also allows you greater precision in meeting your other equipment needs. And if

# PLANNING TIPS FOR THE LONG-DISTANCE HIKER

DAVID GREEN



your pretrip planning is off the mark (and it often will be), you can mail unwanted gear on to a more appropriate supply point.

Be sure to write each of your prospective mail drops in advance to inquire about accepted practice. The Postal Service is required to hold general delivery mail for only 15 days, but many a backwater post office, upon request, will keep your package for several weeks. Send yourself a book, new socks, even those extra boots you may need, besides raw essentials. Just make sure to have it all mailed three to four weeks ahead of your expected pick-up date. Your scheduling can be affected, too, by whether the post office has weekend or limited daily hours. Since many mountain communities have only seasonal postal delivery, you'll want to find out when their season begins; Crest Trail hikers coming into Yosemite's Tuolumne Meadows before the second week in June, for instance, will find their packages held in Yosemite Valley, a 60-mile hitchhike away.



## TRIMMING PACKWEIGHT

I met a fellow near Mt. Whitney whose pack was down to 100 pounds. He had 45 pounds in camera equipment alone, and a five-person tent for himself and his Samoyed. Three fellows in southern California carried sawed-off lawn chairs. Another packed both pairs of boots the trail guide advised he would need for the entire journey. I'm not sure if the idea of hiking from Mexico to Canada is so laden with *macho* undertones that it requires a *macho* pack of 80 or 90 pounds, or if it is simply a matter of haphazard planning, but I find little reason

for and far less pleasure in carrying such a burden.

To cut your load down to size, use every resupply stop available. Food weight is your greatest variable. Choose clothing and equipment that can meet multiple needs. Be selective in what "nonessential" items you carry, such as fishing equipment, cameras and natural history field guides. For added versatility in gear distribution, I reversed a fannypack and used it as a backpack in conjunction with my framepack. In the backpack I put my guidebook, maps and compass, camera, chapstick, hat, gloves, bandanna, notebook and pens, and any other small items I might want to reach without unharnessing completely.

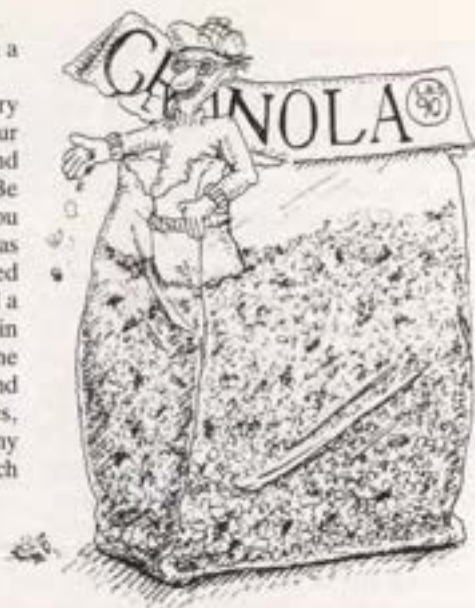
## EATING RIGHT TO STAY FIT

To aid the transition to my trail diet, I gained 10 pounds prior to my Crest Trail venture. I planned for 3,300 calories a day, with a reasonable balance of protein, fat and carbohydrates. Yet within three weeks I lost those 10 pounds and was plagued by a feeling of running-on-empty for the remainder of the journey.

Diet is easily the most idiosyncratic concern of the backpacker, regardless of a trip's duration. I met a fellow who ate his freeze-dried dinners uncooked and unreconstituted, another who subsisted largely on peanut butter and crackers. Although I subscribe to the axiom that if it doesn't taste good, you won't eat it, on a long-distance hike good taste isn't always a first priority—or care.

Your first concern with what you eat is carbohydrates. Although protein is important for cell regeneration, and fat for fat-soluble-vitamin transport, carbohydrates move you down the trail. It's impossible to plan for too many carbohydrates in your trail diet. My menu was virtually all carbs—my pretrip pantry included nearly 90 pounds of homemade granola and more than 130 pounds of dried fruit—yet every one-horse market would see me downing a quick fix of sugar and starch, up to 3,000 calories' worth.

Calories are something else that will undoubtedly get short shrift in your menu planning, perhaps because of our tendency to plan diets with pack weight and taste as the prime considerations. Loss of body weight and strength for lack of sufficient fuel may be a minor issue on a short trip, but on a trip of several weeks or months it's much more important. The National Outdoor Leadership School allots 3,750 calories a day for its activities, but not even that amount would have helped the young fellow I met who lost 75 pounds on his Crest Trail trek.



Another easily overlooked consideration is vitamin and mineral needs. This may sound like Mother talking, but a vitamin/mineral supplement is indispensable. At a time when your body's demands for vitamins and minerals are escalating, your intake of vitamin-rich fresh foods, especially fruits and vegetables, is limited. I included a high-potency multivitamin and additional mineral supplement in my menu planning, to which I credit my freedom from flu, colds, toothache, emotional depression and similar lowered-resistance ailments befalling many Crest Trailers.

One more suggestion: After you've procured all your food supplies, package them in daily rations, particularly your snack foods. If you rely on day-to-day apportioning of that four-pound bag of gorp, you can expect to overeat at the beginning of a supply leg and starve at its end.

## SETTING THE RIGHT PACE

The basic factors are, of course, what physical condition you're in and how closely you want to view your surroundings. If you intend to complete a multithousand-mile trail in one hiking season, then the parameters set by the extended winter season in the mountains will dictate a pace of perhaps 13 miles or more a day. But remember that you have about 3½ hours more daylight to play with at the summer solstice than at either equinox. Also bear in mind that your pack weight fluctuates widely between food supply stops. I was surprised by the number of Crest Trailers whose plans seemed to take little account of the relative terrain of their route; they logged similar daily mileages whether they were roadwalking in the Mo-



# PREPARING FOR A MARATHON TREK

JAY J. JOHNSON

**I**N JUNE 1981 I set forth on one of the longest self-propelled wilderness journeys ever undertaken around the United States—lasting 16 months and covering nearly 10,000 miles. Starting in northern Maine, I backpacked southward along the well-known but still challenging Appalachian Trail to Georgia. Continuing southward by foot along roads and trails, I reached Montgomery, Alabama. There I picked up a 15-foot dory and rowed down the Alabama River, a wild, 350-mile course, to the Gulf of Mexico. I continued by boat along the shimmering Gulf coast, rowing 1,200 miles to Brownsville, Texas. There I exchanged the boat for a 10-speed bicycle and embarked on a 3,100-mile route through the Southwest that ran past most of the outstanding parks and monuments. My bike tour ended in southern California, where the last section of my trek began. I backpacked north on the Pacific Crest Trail through California, Oregon and Washington, arriving finally in British Columbia, Canada, in late September 1982.

Before I could embark on this wonderful adventure, I had to do an extensive amount of planning and preparation to ensure its smooth passage. The long duration and the routing of the trek through wilderness areas made planning for food and equipment very important. I couldn't count on buying nutritious food or proper equipment in the sparsely populated areas I would cross; most of the small general stores in these areas do not stock suitable supplies. Therefore, I had all my provisions mailed to me in care of general delivery at post offices along my route.

Food was my biggest concern, since my body would burn an unusually high number of calories and bear continuous stress almost every day for more than a year. From past experience I made a list of the dried and freeze-dried foods that appealed to my taste buds and were also nutritious, high in calories and light in weight. Then, having obtained information on the nutritional content of each food, I adjusted the quantity of each until the total balance of calories, protein, carbohydrates and fats satisfied my par-



ticular daily needs. To ensure good health, I also planned to use 95% protein powder along with nine different vitamin pills every day.

Over the several years preceding my trek, I had spent more than 100 days hiking, bicycling and boating through a wide range of environments, so I felt able to make practical decisions about the types of lightweight equipment to carry along. From this experience I also knew how long I could use each piece of equipment before having to replace it, which allowed me to compile a list of items and their functional lifetimes.

With exact lists of both food and equipment, I could easily calculate the total amount of each item I'd need for the entire trek. For example: the LP fuel cartridges for my mini-stove lasted 20 days; therefore I divided 20 into 476 (total number of trek days) and arrived at a total of 24 cartridges. To determine the quantity of food, I divided the 18 available freeze-dried suppers into 476 days and bought 26 servings of each. I then purchased massive quantities of food and equipment—more than 1,500 pounds' worth—to last throughout the whole adventure.

Along with this calculating and figuring, I plotted a day-by-day schedule for the entire journey using hundreds of topographical maps. Based on my past wilderness travel, I estimated I could comfortably average 17 miles a day walking, 20 miles a day (every other day) rowing, and 80 miles a day biking. With this knowledge I plotted approximately where to camp each night—allowing a

full rest day every 10 days—for 476 days, covering the entire 10,000 miles.

From the maps and guidebooks I also located resupply points (mostly post offices). Knowing where I would travel each day made it easy to figure out the number of days between resupply points, and thus to calculate the amount of supplies to be sent to each place. For instance: If six days passed between two points, then I would need six measures of my daily food requirement. LP fuel cartridges had to be resupplied every 20 days, so I needed one cartridge at roughly every third resupply point. I then tediously sorted my enormous pile of supplies bit by bit into 78 large cardboard boxes that would be mailed by my helpful parents to my 78 resupply points around the country.

With the gear finally stowed away, all that remained was to figure out the mailing date for each box. Generally the parcel-post zone number equals the number of days required for delivery of parcel-post packages. Knowing this, I planned to have each package mailed 10 days earlier than my required delivery time to ensure that supplies would reach the post office before I did. For example: I was scheduled to arrive by foot at the small post office in Beldon, California (zone 8), on June 28, so I planned to have the package sent on June 10. To make sure that my food parcel would still be there when I arrived, I had my parents send a postcard and a letter to the postmaster along with each package, requesting that he hold my parcel until I arrived.

The package was waiting for me at Beldon, just as every other package had been at each resupply point throughout the journey. In fact, the whole system of planning and organization worked like a charm. I always had enough food, I never ran out of supplies, and I found that my day-to-day schedule worked out almost perfectly. Without this thorough preparation, I doubt that I would have made it halfway to my destination. By taking the time and making the effort beforehand, I guaranteed the ease and enjoyment of my wilderness travel. □

*Writer/illustrator Jay J. Johnson is writing two books about his trekking experiences—one for adults, and one for children.*



have or slogging over the high passes of the Sierra Nevada through winter snowpack. No matter what pace you set for yourself at the outset, you will find that the norms set by your past experience, your concept of distance and its relationship to time, will be amended by your marathon experience.

## PICKING YOUR COMPANY

Whether to hike solo or with others is a decision that usually makes itself, with custom, security and the availability of companions the deciding factors. As with many other facets of a backcountry trip, however, the conditions of a long-distance hike complicate matters. Rarely does a hiking group allow for much individual privacy or detachment. This may be a minimal concern on a weekend trip, but not even in marriage are partners expected to spend 24 hours a day

with each other for several weeks at a time. And clearly the decision-making process in a group is more cumbersome than for an individual. Take some time with your partners before you begin your trip to discuss how the group will work together, how it will meet the needs of each member for alone-time, and the like.

## FINDING YOUR WAY

Old, established trails are often so well-marked, you could follow them in your sleep. And as a trail gains in popularity, it's invariably immortalized with a trail guide. However, even such a big-name trail as the Pacific Crest Trail has sections that are a melange of trail bits, overgrown jeep paths, and logging roads, any of which can change dramatically from one year to the next as new sections of footpath are constructed.

If you're planning a journey on a newly constructed or in-progress name-trail, be sure to write the appropriate national forests and trail associations responsible for trail construction and maintenance, to get word of last-minute and anticipated trail changes (write several months in advance if you hope to get an answer before your trip). Even with the most recent information, however, prepare yourself for temporary detours (and their even-more-temporary markings). National forest recreational maps can be surprisingly useful; though nondetailed, they give you a broad perspective and are especially helpful for planning escape routes in bad weather.

A commonly used hedge against route-finding difficulties, especially when following a nameless, guideless trail, is to purchase the USGS topographic maps of the trail area. However, the USGS maps suffer from several deficiencies. The most obvious flaw

is that, with new trails being constructed each year, a 1955 topo map can be woefully incomplete. Even updated, newly issued maps are drawn from field data collected and photographs taken several years previously. A trail shown on a map may have been rerouted, old trail junctions may no longer exist because side-trails have been abandoned, and new trails and roads are likely to have cropped up.

Worse yet, we tend to take the information on these incredibly detailed maps as gospel. It ain't necessarily so. Based primarily on aerial photos, topo maps can be particularly misleading in heavily forested areas, where they may omit ill-defined watercourses, misrepresent the location of stream crossings and, more often, mismark such man-made objects as cabins, boundary signs and trail junctions.

The most serious drawback to the topos, though, is the way we generally use them. We give the map little attention until we need to know where we are, and then we no longer have a ready point of reference to fix our spot on the map. Moreover, few of us have ever had to depend on mapreading skills.

To prepare yourself for using topo maps, take part in an orienteering meet or two before your trip. To locate such activities in your area, search out a map-and-compass course at a local community college or outdoor club; you might also contact the ROTC program at a nearby university. No other activity can bolster your confidence more, or show you how dismally inadequate your mapreading skills are. Once on the trail, use your maps in an ongoing process to stay reasonably certain of your location. Even the most obviously marked trail can become a maze for the inattentive.

Another issue, at least for hikers attempting a major north-south trail, is which direction to take. Act on your knowledge of nature, and minimize your contact with winterlike, high-mountain snowpack and unstable weather by starting in the south and following the spring and summer seasons northward.

## GETTING IN SHAPE

The physical stress of hiking day in and day out for many miles is often incomprehensible beforehand. Various conditioning activities, however, can help ease the toll this stress takes on your body. Increase your cardiovascular efficiency with such aerobic activities as walking, running, swimming, cycling and cross-country skiing. Strengthen the hill-climbing muscles in your legs by running hills or, even better, biking or





skiing long, gentle inclines. I spent several mornings a week stomping around the neighborhood wearing an old frame pack filled with 50 pounds of firewood to get my hips and shoulders used to carrying weight.

Yoga and similar stretching exercises are very useful for increasing the elasticity in the muscles—although stretching during the hike itself is even more important. Toughen your feet by applying rubbing alcohol at least once a day for several weeks prior to departure. To prevent blisters, I had my boots fitted over two pairs of socks, so I could remove one pair to relieve slight foot swelling toward the end of a long day. The one time I got a blister, on the outside of a little toe in the first week on the trek, removing the liner sock relieved the pressure and aggravation when moleskin and bandages had failed.

But as the saying goes, "The best conditioning for backpacking is backpacking." All you can do for your body in the city is introduce it to the syllabus. Learning comes only on the trail.

## GETTING MENTALLY PREPARED

Flushed with anticipation of your journey, it's easy to immerse yourself completely in topo maps and equipment catalogs. Yet a marathon hiker is as likely to abandon the trail because of psychological burnout as because of boots that don't fit just right or a tent that leaks.

Ask yourself the following questions: What motivates me to undertake the trek? What do I want to accomplish on it? What aspects of the experience mean the most to me? The answers may be crucial to the

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successful completion of one of the multi-thousand-mile trails. When your daily mileage requirements stay consistently in the 12-to-20-mile range, gaining the end and enjoying the means can become mutually exclusive.

If completing a name trail is your highest priority, look for ways to make the physical exertion—the process—part of the overall experience. Keeping a trail journal greatly



helped me look more closely at my endeavor. A well-selected natural history fieldguide will bring you even closer to your surroundings. Rest days are a refreshing break for mind and body alike, and varying your companions will provide a change of routine. Above all, allow yourself the flexibility to alter your goals in mid-trip. There is no drudgery so acute as hiking for several weeks when the thrill is gone.

A marathon hike is unlike any other backcountry experience. Under the strain of the long haul, your equipment will fail, your body will break down, your mind will drift among the subterranean pillars of despair and dejection. No matter how benign the weather and trail conditions or how seemingly moderate your itinerary, you will experience low moments far beyond expectation. At such times, your salvation will be an ability to adapt to the situation, to let go of "what should be" and recognize "what is."

But most of all, marathon hiking brings moments of exhilaration so keen they take your breath away. It is so perfect, so exquisite a means of experiencing wilderness that you are blinded to all else. With good sense and a wise approach to the inevitable problems, your marathon adventure should leave you as eager for the trail at the end as you felt at the beginning. □

*David Green, author of A Pacific Crest Odyssey, has also written a guidebook to northern California's Marble Mountain Wilderness.*

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M813

**B**ACKPACKING STOVES have many advantages over wood fires. Stoves light quickly in either rainy or dry weather. They burn clean, so smoke doesn't get in your eyes or ashes in your food. They reduce the hazard of forest fires and they are ideal for winter camping when you may want to drink several hot brews a day to keep your core temperature up and your spirits soaring. On the other hand, wood fires smell sweet and are hypnotically beautiful. When the weather is inclement, and the stove refuses to work or fuel has run out, being able to build a fire can save your life.

Advocates of wood fires can be found in Maine, Minnesota and Alaska, to name but a few places where trees abound. By contrast, in the more arid high country of California—where you cannot build a wood fire above timberline—and in Wyoming and Colorado, where the replacement rate of trees is low, backpackers favor stoves. Neither group is inherently right or wrong. They've simply chosen cooking methods appropriate to their particular environ-

ments. However, during the last few years more and more hikers have routinely opted for a convenient and versatile stove, even in regions where wood is plentiful.

Choosing a suitable stove isn't difficult if you first outline several important "selection criteria": the season in which your stove will most often see use, the sort of fuel it can burn, the weight you are willing to carry, the type of cooking you like to do, and the noise of operation that you're prepared to endure. Although perhaps of lesser importance, another feature to consider would be the stove's capacity to stay lit when exposed to wind. Of these criteria, the most important to consider is season.

Basically there are two genres of stoves: those exclusively for winter use, and all others. Within these two categories are stoves that burn liquid fuels and usually are equipped with pressurizing pumps, and those that burn LNG stored under pressure

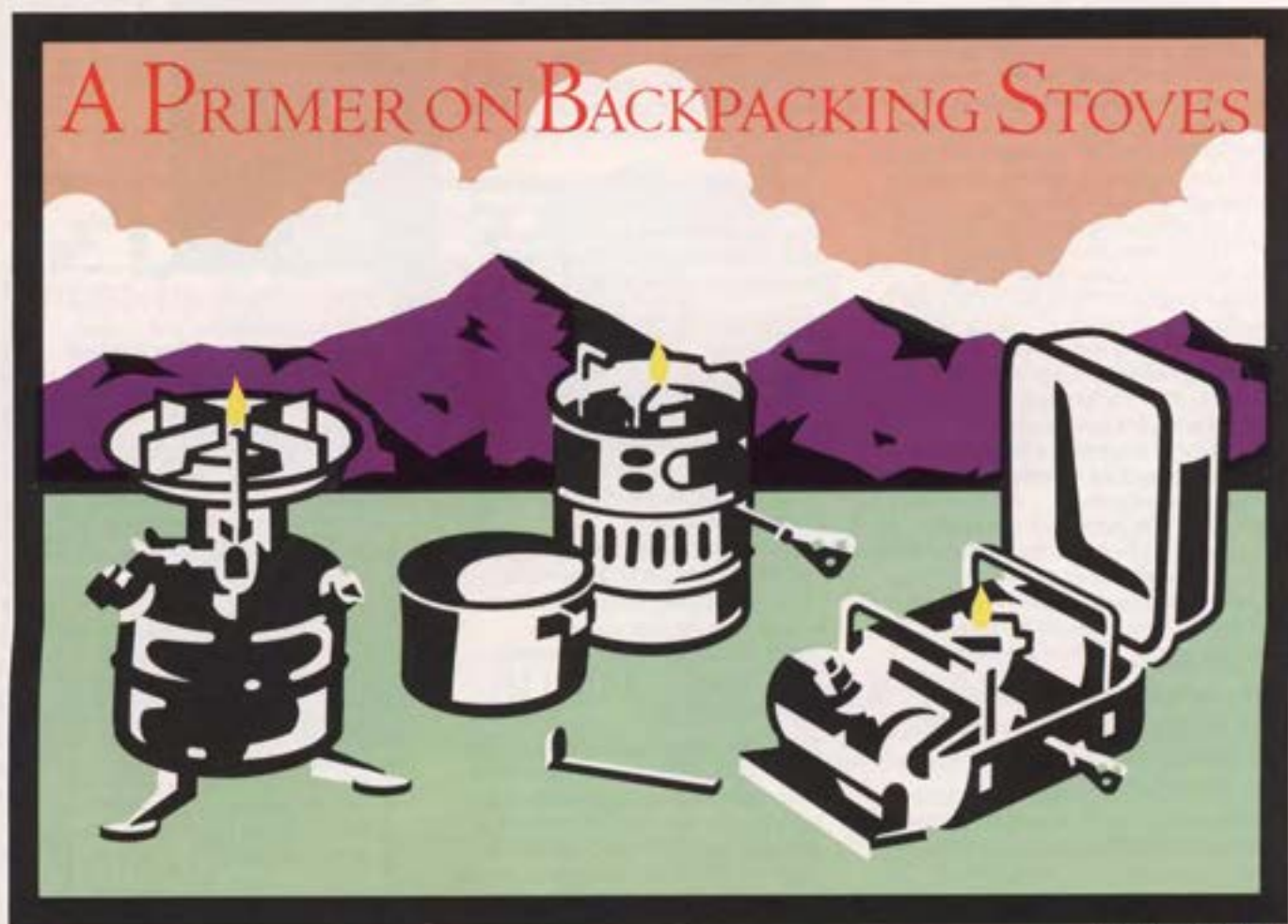
in tanks that cannot be augmented by pumps.

A stove intended for winter use incorporates a pump in its tank to maintain operating pressure in subzero weather, and puts out tremendous heat for melting snow. Such a stove will also work magnificently during the summer, whereas a three-season stove, ordinarily without a pressurizing pump, will frequently take hours to boil water in subzero weather or, even worse, won't function at all.

Your choice is therefore clear. Buy a stove that burns gas or kerosene and is equipped with a pump if you're going to camp in the winter, and a stove without a pump, using either liquid fuel or LNG, if you're fairly certain the thermometer won't be on the nether side of 32° Fahrenheit.

In the past this choice hasn't been easy to make. Winter stoves were heavy and bulky affairs with which a hiker, tripping along the Appalachian Trail, wouldn't consider burdening himself. But as mechanical designs have been improved and lighter and stronger metals have been used in grills and tanks,

TED KERASOTE



Left to right: Coleman Peak I, Svea 123, Optimus 8R.

ILLUSTRATIONS BY BOB CHAN



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# STRETCH

stoves with pumps have become as light as or lighter than some three-season models. Fine examples of this "all-year" category of stoves are the MSR Firefly (15 oz.) and the Coleman Peak 1 (32 oz.).

Some light, sturdy three-season stoves, such as the Optimus 8R (23 oz.) and the Svea 123 (15 oz.), can also be used in the winter by attaching an optional Mini Pump, which is designed to fit over the fuel cap. Although this pump can maintain sufficient pressure in cold weather, the small size of the stoves' fuel tanks limits their usefulness in true winter conditions, when large quantities of snow must be melted for drinking and cooking. Nonetheless many campers find the weight and compactness of the Svea and the Optimus attractive and their simplicity of field maintenance more than enough reason to use them throughout the spring, summer and fall.

The stoves mentioned so far burn white gas. As a fuel for backpacking stoves, white gas has many advantages. It can be purchased anywhere in the United States and Canada. It can be used as a primer and, once burning, it produces a very hot flame. If spilled, white gas evaporates quickly and leaves no sticky residue. On the minus side, white gas of pure quality is often impossible to find in Asia or South America, where many Americans trek and climb. Finally, spilled white gas is extremely flammable and its vapors can explode in a confined space such as a tent.

Alternatives to white gas are kerosene and butane. Kerosene is sold throughout the world and, once lit, burns with a clean, hot flame. While being carried, however, its strong odor tends to permeate a pack and its contents. Spilled kerosene is quite safe. In

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fact it is very difficult to light. This characteristic limits kerosene's use as a priming fuel, and thus a separate primer, often gasoline, must be carried to get a kerosene stove going. Kerosene is also cheaper than white gas and can be used in other heating appliances. The Optimus 00 Camper (28 oz.) would be a good choice for the winter camper or for trekkers intending to visit the high country of Peru or Nepal.

Butane, the third fuel most often used in backpacking stoves, is at first glance an ideal heat source. It comes in cannisters, so there's no problem of spillage. Stoves that use butane require no priming and, as many pleased users have noted, operating one is as simple as turning on the stove at home: You flick the on-off valve, place a lighter over the burner and, as my granddad used to say, "Now you're cooking with gas, my boy." The convenience doesn't come without its price. The butane cannisters are costly and they obviously can't be discarded in the wild. You carry the weight in and you must carry the weight out. In addition, the heat output of butane is not nearly as high as that of white gas or kerosene and, worst of all, butane will barely sputter when the temperature drops below freezing. At below zero you can kiss hot food goodbye.

Still, butane stoves have their place. For instance, one model, the Camping Gaz



Optimus 00 Camper (left) and Camping Gaz Bleuet 206.

Bleuet 206, weighs only 12 oz. and is a lovely stove for the bike tourer. I carried one of these little gems all through South America, cooked both alongside the road and in cheap hotel rooms and, by keeping the cannisters warm in my sleeping bag, managed to eke out some hot coffee on a few cold mornings. Another very light butane stove a biker

would find more than adequate is the Hank Roberts mini-stove.

Perhaps the most versatile solution in choosing a fuel is found in MSR's 16-ounce X-GK stove, proven on many winter expeditions, and the newly introduced Optimus 199 and 111. All three stoves will burn white gas, leaded and unleaded automotive fuel,



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MSR X-GK

It's not off the mark to say that backpackers fall into two culinary factions: the boilers and the simmerers. The former drop soup and rice, or a freeze-dried dinner, into a pot, bring it to a boil and eat it. The latter stuff their backpacks with condiments, vegetables and oils, eggs, sauces, perhaps even a recipe or three, and dream of epicurean repasts under the stars.

In short, the wilderness chefs need stoves that will simmer. Unfortunately, such devices are rare. The Coleman Peak I, which burns white gas, is the exception and, even in the hands of a novice, can produce excellent omelets and crêpes. Furthermore, it will boil water quickly if the need arises. Most butane stoves will also do an admirable job of simmering. On the other hand, most white-gas and kerosene stoves are only adequate at simmering. Because their burner heads are small, they tend to concentrate even their low flame in a small area, producing scorched food for the inattentive.

Our final criterion for stove selection is noise. After all, one of the reasons we go to the wilderness is to enjoy the quiet. Unfortunately, 90% of the gas- or kerosene-burning backpacking stoves on the market sound like jets taking off. In the open and for the short time it takes to cook a meal, the noise is bearable. In the confined quarters of a tent or snowcave, a stove going full blast can

make conversation impossible, and those who like to linger over their morning pancakes while listening to babbling brooks may find a roaring stove annoying. Although they do emit an audible whine, butane stoves are relatively quiet, as is the Coleman Peak I at low to medium settings.

In this stove review I've not included safety and durability as criteria simply because I've never had problems of either kind with any of the stoves mentioned. The two factors are closely allied, and both can be fairly well ensured if you follow the manufacturers' directions and learn the particular idiosyncracies of your individual stove. (In the field I carry spare parts as well as tools to take apart the stove I'm using. In 13 years of using these various stoves I've had two breakdowns I couldn't fix in the field—I was not carrying spares for parts that had worn out.) If guidance were to be given with respect to reliability, I think it's fair to say that the Optimus and Svea, once burning, are the least touchy of the backpacking stoves to adjust, while the MSR and the Coleman are the most "high strung" and require a delicate touch and a patient, dexterous user. □

*Ted Kerasiote has been associated with Sports Afield and Cross-Country Skier magazines. He has skied, hiked and climbed in Alaska, the Rockies, the Andes and the Himalayas.*

kerosene, diesel—even Jack Daniel's, or so rumor has it.

Evaluating the temperature range at which a stove will operate, its weight and the type of fuel it will burn will give you a general idea of whether it is suitable for your backpacking needs. Your style of cooking will narrow your choices further.

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## PROFESSIONAL STAFF IN A CLUB OF VOLUNTEERS

BOB IRWIN

**P**ERIODS OF RAMPANT population growth and urban and industrial development put heavy strains on the environment. We all know that. But we sometimes forget that environmental organizations too can be affected by rapid growth. The Sierra Club is no exception. It's been going through such a period recently, just as it did a decade ago—but with a difference. The first time—from near the peak of the club's 1965 campaign to keep dams out of the Grand Canyon to 1970, the year of the first Earth Day—Sierra Club membership more than tripled. At the beginning of that five-year surge the Club's office and staff were barely able to service its 32,815 members. By the end of the period there were another 81,521 to take care of. The largely volunteer-run Club had no choice. It hired more staff and shifted to new, more sophisticated office procedures.

Growth, and the steps taken to accommodate it, worried many longtime activists. They felt the Club's strong volunteer structure might be weakened. Fears that professionals might take over were voiced at meetings of the Sierra Club Council and expressed in some chapter newsletters. But such fears were soon laid to rest.

In the 1970s, more moderate growth gave the Club time to smooth out its operations and improve its services. Its leadership succeeded both in strengthening the role of the volunteer and in establishing high professional standards for a staff sensitive to the needs of the members, particularly the active ones. By 1980, when the second great wave of new members came rolling in, the Club was ready. While the membership gain for the three fiscal years ended last Septem-

ber 30 was a "mere" 82%, the increase in sheer numbers came to an impressive 147,202, which pushed total membership to 324,910. In those three years the Club added 63 full-timers to the staff, for a total of 192, of whom 33 were working in the field and 13 in the Washington, D.C., office.

So much for statistics. The point is, the Club was prepared to handle this latest flood of new members. Over the past decade it had put its financial house in order, reorganized its office operations, installed and

programmed a computer and worked the bugs out, stepped up its fundraising and member-recruiting efforts, and taken steps to develop a progressive employee-relations program.

### A LOOK AT THE CLUB'S STAFF

To get the facts on the Club's employment policies and practices—how it hires, compensates and treats its staff, especially its professionals—I dropped in on Carol Baskin one wintry afternoon. At that time she was the Club's director of personnel; she has since resigned for health reasons. Most people who come to work for the Sierra Club, she said, do so because they believe in its goals. They also prefer the friendly and casual atmosphere of a nonprofit organization. Job security, she went on, is another plus. In business, where the bottom line is profit, the individual needs of people are more expendable. Because of the "eager to work for the Club" factor, job applicants are always told of the limited chances for advancement. To attract and keep good people, Carol said, the Club must compete with other nonprofit groups. For this reason, every two years it surveys the salary schedules of competitors. Each year job descriptions are evaluated in terms of goals achieved and, ultimately, of dollars-and-cents return to the Club. The state of the economy is another factor taken into account in establishing salary levels. Above and beyond fair pay, liberal benefits (e.g., ten paid holidays, paid vacations, and full

## SIGHTINGS



We've got a treat for all those readers who've longed for a glimpse of that tara avis, Bob Irwin. We managed to snap a picture of the Observer at a Sierra Club meeting. He's the tall gentleman on the right talking with volunteers Wilt Mintkeski (left) and Richard Cellarius.

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medical and health coverage) are also provided.

In addition to material compensations, there are other equally important rewards. The Sierra Club encourages each employee to develop professionally through a program that includes in-house training and job-related outside studies, for which it pays tuition fees. The Club's democratic policies extend to the workplace. A Stewards Committee made up of representatives from each department meets once a month to help keep internal communication lines open and to suggest ways to resolve troublesome office problems. By taking turns serving as stewards, staff members come to feel connected to all of the Club, not just their corner of it. Once a month, too, Executive Director Mike McCloskey runs an hour-long informal round table to brief new staff members on the Sierra Club and its programs.

Taking into account the normal run of human imperfections, plus a few obstacles inherent in such a large-scale nonprofit enterprise, the professional staff has done a remarkable job of coordinating, channeling and making the most of the Club's unique source of strength: its impressive number of exceptionally talented and highly motivated activist volunteers.

The Sierra Club's board of directors, national council, national committees, task forces and regional conservation committees—all are made up of volunteers, hundreds of them. But thousands of others donate untold hours of grassroots labor for their chapters and groups: leading outings, putting out newsletters, testifying at hearings, writing letters to public officials, lobbying, raising funds, working on local committees, building trails, and lots more. And that workload is growing, especially for many chapters that have been growing faster than the Club as a whole. Eighteen have doubled their membership in the last two years. Eight, numbering 10,000 or more members each, are larger than the entire Club was in 1950. Just as the national club did more than a decade ago, most chapters have now reached the point of volunteer overload. Some chapters—and some groups as well—have found that they no longer can leave all their work to volunteers. They have opened offices and hired people to run them.

#### HOW THREE CHAPTERS DO IT

The Mississippi Chapter's office is typical of most others in their early stages. It started out small—in space, rent and staff (usually volunteers). But it gives the Club and chapter a local presence and phone number. It also serves as a communications hub and a place to do chapter business and hold committee meetings. Volunteer Sue Noblin

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Physics . . . . .	8/26-28
Shakespeare's Ornithology . . . . .	8/12-14
Writing . . . . .	10/14-16
Ballroom Dancing . . . . .	8/19-21
Folk Dancing . . . . .	9/16-18
Rock Climbing (beginners) . . . . .	6/24-26
Rock Climbing (leaders) . . . . .	7/1-3
Rafting (Truckee River) . . . . .	8/26-28
Bicycling (& maintenance) . . . . .	9/3-5
Bird Watching (identify) . . . . .	8/12-14
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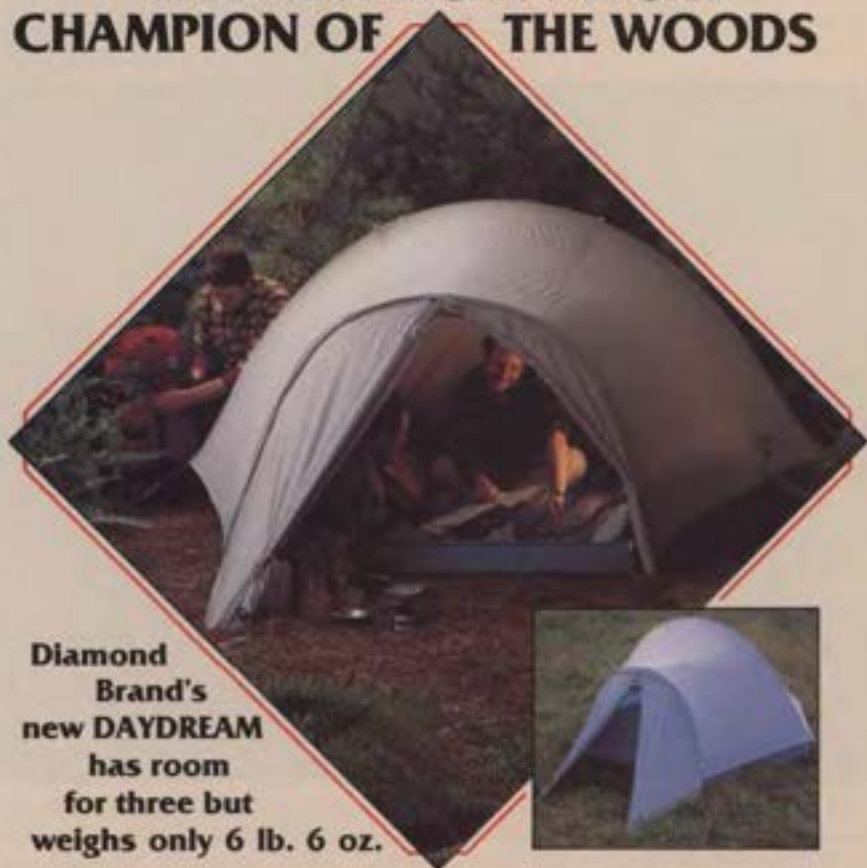
works six hours a week as manager of the 750-member Mississippi Chapter's office—three or four hours there, the rest at home. Other volunteers do short stints in the part-time operation. The chapter and its Jackson-based Central Mississippi Group split the \$150-a-month rent.

The San Francisco Bay Chapter operates at the opposite pole from the Mississippi Chapter. It is one of the two oldest (1924) and largest (32,000 members). Angeles is 13 years older and 5,000 members larger. Both chapters have had offices for years. Each shares space with and enjoys the services of the Club's field representative in its region. The Bay Chapter operates a storefront office and environmental bookstore on an Oakland street with high foot-traffic. It is run by a paid professional staff of three, plus volunteers drawn from a pool of 20 to 30 chapter members. Two other pros share the space: Field Rep Russ Shay and Northern California/Nevada RCC Secretary Madeleine Watters. Mark Palmer puts in four days a week as office manager. (His other three days are fully committed to his extensive volunteer conservation work.) Dave Nesmith, chapter conservation coordinator, and Deborah Onodera, bookstore manager, round out the full-time staff. The \$400-a-month rent is a bargain, says Palmer; and the income from book sales contributes a significant amount to the revenue side of the chapter's \$221,000 annual budget.

The New England Chapter has had an office almost from the day of its founding in 1970. Though not the largest chapter, it has been one of the fastest-growing in the last two years—from 6,000 to 13,000 members. In December 1981 one of the chapter's founders, Abigail Avery, sent me a copy of the *New England Sierran* along with a note and the latest report (in her words) "of our Live-Wire/Office Manager/Super Effective/Poverty-Level-Paid/Single Staff Member Priscilla Chapman." Her tightly packed, four-page account of chapter activities goes out each month with the executive committee agenda and minutes. I happened to be in Boston one rainy spring day last year and walked up Beacon Hill to a tired old red-brick duplex to check out the office and its "live-wire" manager. Across the small, cluttered room a young woman with long auburn hair was in intense conversation on the phone. The Massachusetts primary was coming up, and people kept popping in, interrupting her briefly, and leaving. My time was short, and I managed to tell her I'd try to phone her later, which I did some weeks later—from my home back in California. I wanted to find out just how a staff position can grow out of a commitment to volunteer for the Club.

Priscilla Chapman, like the Bay Chapter's

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## SIGHTINGS



Club leaders confer during a recent Board meeting. From left to right: Sandy Tepper, Club secretary; Richard Tybout, chairman of the Economics Committee; Nicholas Robinson, Board member and international vice president; Ann Duff, Board member.

© MUSH EMMOTT

Mark Palmer, started out as a volunteer, and has also remained one. (Last fall she put in long hours campaigning for Representative Barney Frank in her hometown of Fall River.) Five years ago, after volunteering to edit the *New England Sierran*, she soon found herself involved in conservation issues. In 1980, when the job as office manager opened, she took it. She supplemented her "poverty level" pay from that 30-hours-a-week job by working another 20 hours as a church organist and choir director. Her phone-answering/receptionist/secretarial job soon expanded into one of total chapter involvement. In recognition of her greater responsibilities, the chapter changed her title to executive director. Her duties now include:

- Organizing and working with volunteers to strengthen contacts with the media and with federal and state governments;
- Coordinating the chapter's lobbying of the 10 U.S. senators and all other legislators in the five states of the New England Chapter (Connecticut is a chapter by itself);
- Representing the chapter at hearings and other events when no volunteer is available.

Last fall the chapter took enough money from its \$71,000 budget to make the executive director's job full-time, to expand the office to two rooms, and to hire a part-time assistant, Lauren Sucich. The chapter also

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spokesperson. Also, confusion arises over how much authority staff should exercise when chapter leaders are not immediately available.

As the Club's staff and leaders at all levels have become aware of those problems, they've seen the need to take a closer look at the Club's proliferating "branch operations" and the role of its growing corps of grassroots pros.

## CHAPTER STAFF EXCHANGE

One of the people in Club headquarters who came in regular contact with chapter volunteers and staff was Ceil Dickinson, in the course of her work in the conservation department. In her job as campaign and issue specialist, Ceil provides information to and gets feedback from the chapters on the Club's priority issues, and helps coordinate and promote grassroots action on the Club's major environmental campaigns. Having encountered frustrating breakdowns in communication and a lack of a understanding of each other's policies, procedures and problems on the part of people in headquarters and those in the field, she proposed that the Club use a \$1,000 fund, set up for training chapter staff, to bring national and chapter

maintains a pool of office helpers under chief volunteer Allison Marks.

At least nine other chapters with memberships of 7,000 or more maintain full-operation offices—from New York to San Diego and from Tallahassee to St. Paul. Each started out as modestly as Mississippi's, expanding in pace with the chapter's growth, with

little, if any, guidance from the Club. In time, office volunteers often became paid staff, blurring the fine line between the two roles. While office managers give continuity to a chapter's affairs, they also become more visible and available to the media than the ever-changing chairs; so the office chief often becomes the local Sierra Club

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staff people together for a learning session and an exchange of ideas. She found an ally in personnel, Rosie Goldenberg. As the Club's specialist in human resources development, Rosie also had staff-training funds available. (The board of directors' fifth officer, Marty Fluharty, volunteered additional funding from her Grassroots Effectiveness Project.) Ceil's proposal was accepted, and she and Rosie put in hours of work through the winter and spring of 1982 defining and redefining goals, finding leaders and drafting an agenda, ensuring the success of the Chapter Staff Exchange.

By late June all chapter chairs were invited to nominate either an experienced staff member or a volunteer active in chapter affairs as an Exchange participant. From the 28 acceptances, 18 nominees were chosen: 11 paid staff members, three unpaid volunteer office managers, and four chapter officers. The national office picked up half of their travel expenses to San Francisco; they or their chapters paid the other half. The participants began arriving at 530 Bush on September 21 for three full days of workshops, brainstorming sessions, a fabulous potluck feast at Ceil's house, briefings on the Club's major programs, and—probably most valuable—just getting to know one another and exchange ideas with the national staff. They came from Boston, Toronto, Walla Walla, Honolulu, Santa Fe and points in between.

At the end of the sessions, all of the exhausted participants were handed evaluation forms for rating the Exchange and making comments. "Too much going on. I felt rushed and overwhelmed," one commented. Another wished there had been more free time now and then to digest each day's presentations and experiences. Overall, however, the Exchange got an 81% positive rating on both the content and presentation of material. All but one participant hoped the Club would hold another Exchange soon.

A brainstorming workshop on problem-solving skillfully led by Paula Carrell early in the sessions drew an enthusiastic response. It probably was the prime facilitator, bringing ideas out into the open and developing a stimulating interchange. Paula, the Bay Chapter conservation coordinator at the time and now the Club's assistant legislative representative in the Sacramento office, conducted the liveliest and most productive workshop I have ever attended. She deftly drew ideas from people and then guided them in defining and solving two basic problems: How to get things done (1) that you want to do but haven't, and (2) that you are doing but haven't yet worked out. "Paula's leadership was great" . . . "Fun, well organized, good timing" . . . "Valuable—a good chance to vent frustrations" were among the

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Participants in the 1982 Chapter Staff Exchange included: (left to right, top row) Betsy Reifsnider, Jim Dockery, Al Strickhold, Paul Weekley; (second row) Joyce Stevens, Ceil Dickinson, Ellen Greif, Sue Noblin, Priscilla Chapman, Sue Pemberton, Rosie Goldenberg; (third row) Anne Champaigne, Carolyn Kreskulla, Kris Sigford, Denby Fawcett, Skip Nichols; (bottom row) Jane Elder, Marty Fluharty, Madeleine Watters. (Not pictured: Dana Wright, Chris Ballantyne, Paula Carrell.)

comments after the workshop was over.

A week or so later Ceil Dickinson said, "I'm glad we did it; we had some trepidation about the Exchange at first." She said she was struck by the high degree of competence and energy among Club workers, and she added, "They shouldn't be ignored by us in the national office." She thought they got a lot out of the Chapter Staff Exchange and that both sides got to understand each other better. It built a certain camaraderie among

people in the field, who often feel alone and isolated from the center of action. Next time? Ceil would change the pace. She'd allow more time for reflection, give the participants more opportunity to talk with each other, and cut down on the lecturing. One thoughtful participant agreed on the lecturing point, and suggested that the national staff next time learn what some of the chapter staffs' problems are.

Will there be a next time? Rosie Golden-



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berg and Ceil both hope so. There is no budget provision so far, but there is hope; and there is strong support among the national staff and all those involved in the success of the first Chapter Staff Exchange for putting on the second one soon.

## TRAIL BUILDING AND OTHER "SLAVERY"

With the end of winter weather, more and more Club members are preparing to return to the trails—not just to enjoy them, but to build, improve, repair or maintain them. These volunteer trail-maintenance crews might clean up litter, plant trees or ground cover, or restore a dilapidated campground.

Volunteer trail maintenance creates a positive image, concrete evidence to counter the view that the Sierra Club is always "agin" everything. Our efforts win the good will and respect of the people who manage

our parks and forests, as well as the hikers and campers who benefit from the work.

Here are a few examples of what some chapters have accomplished in the last year:

- Angeles—Last spring a volunteer crew of twelve aided park staff in the 500-hour task of constructing a half-mile trail into a previously inaccessible portion of Malibu Creek State Park, nestled in the Santa Monica Mountains. And at the opening of Los Angeles' newest city park, Stoney Point, the Sierra Club led a massive site cleanup that yielded 30 pounds of aluminum and bag after bag of glass and mixed trash.
- Great Lakes—Sierra Club Workathon volunteers labored over the 45-mile-long Illinois Prairie Path, which runs west from a forest preserve outside Chicago to the cities of Aurora and Elgin. Among the workathon's achievements in 1982: repairing approaches to the Salt Creek bridge, shoring up a glacial moraine landslide in Glen Ellyn, restoring a native prairie and cleaning up the entire spur section to Batavia.

## SIERRA NOTES

- *The Next Nuclear Gamble*, published by the Council on Economic Priorities, a nonprofit public-service research organization, was written by Club activist Marvin Resnikoff. The book warns that federal plans to begin trucking vast amounts of nuclear-waste fuel pose a major, avoidable threat to the public. It advocates, instead, employment of dry-storage techniques at the reactor sites until such time as a permanent federal storage site is established. Resnikoff will soon be joining the Sierra Club staff as co-director of the New York Radioactive Waste Campaign.

- The Sierra Club Photography Committee of the New York Group is sponsoring "Nature Observed," an exhibit at Citibank, 55 Wall St., of the work of 24 Sierra Club photographers. The exhibit, which runs from April 12 to May 31, 1983, includes both color and black-and-white photography.

- Club Executive Director Mike McCloskey has been invited to be the convocation speaker at his alma mater, the University of Oregon Law School, on May 14, 1983. His address is titled "Believing You Make A Difference."

- The Sierra Club's Population Committee, composed of Club volunteers and leaders, coordinates the Club's work on controlling population growth. Those interested in being considered for membership on the committee should write to Dennis Willigan,

Dept. of Sociology, University of Utah, Salt Lake City, UT 84112.

- Sierra Club author Sam Epstein appeared on *Face the Nation* on Sunday, March 20, 1983. Epstein co-authored the book *Hazardous Waste in America* with Carl Pope and Lester Brown.

- Sierra Club Public Affairs has recently published three handbooks for activists. The first, *Media Handbook: A Guide for Activists*, by David Gancher, describes how to publicize your point of view on radio and television and in print. It's available from the Club for \$1.50 plus 25¢ postage.

- *Saving the Solitude: A Guide to the BLM Wilderness Study Process* (\$3 plus 25¢ postage), by James Catlin, serves as an introduction to the complicated process by which the BLM designates land as wilderness. It includes definitions, form letters, and a description of how to write up a wilderness study to submit to the BLM.

- *A Citizen's Primer for Waterfront Revitalization* (\$3.50 postage paid), prepared by Neil Goldstein, Dimitri Balamotis and Suzanne Brask for the Sierra Club Coastal Committee, describes the role citizens can play in achieving consensus on environmentally beneficial waterfront revitalization plans.

All three books can be ordered from Information Services, Sierra Club, 530 Bush St., San Francisco, CA 94108. □



• Mackinac—Last Labor Day weekend the chapter ran its second annual service trip to Michigan's Upper Peninsula, where members did maintenance work on a section of the North Country Trail in Pictured Rocks National Lakeshore. The Park Service provided the tools.

• Toiyabe—When budget cuts left the Forest Service with plenty of grass seeds but few staffers to sow them, Club members trekked into central Nevada to hand-seed the fire-scarred and gullied southern slopes of Crow Canyon in the Toiyabe National Forest. An earlier aerial spraying of seeds had proved only partly successful. The Club's crew managed to sow a quantity of Palmyrian winterfat, a Soviet import the agency is studying as forage for cattle and wildlife, along with the Forest Service's mixed grass seeds.

• Rio Grande—Every Saturday from May through October for the past two years a hardy group of Sierra Club members has toiled over their "adopted" trail in the Sandia Mountains north of Albuquerque. The crew removed windfall, erected water bars to check erosion, built retaining walls, filled in washouts and moved rocks. While the Forest Service supplied the material and equipment, the Sierra Club donated the muscle and time—estimated at more than 600 hours.

## TWO GOLDEN JUBILEES

Golden State chapter Loma Prieta will be marking its 50th anniversary on June 18. The chapter was formed in 1933 when 53 charter members gathered in a grove on the Duveneck Ranch in the hills above Los Altos. The chapter, now the fourth-largest in the Club, with more than 17,000 members, covers the peninsula south of San Francisco into and a ways beyond the San Jose area. Frank Duveneck, the oldest charter member on the chapter's rolls, will be the guest of honor at the June festivities.

Last fall, some 70 members of the San Geronimo Chapter marked its golden jubilee in true Sierra Club style with a festive barbecue in a San Bernardino National Forest campground. Only one of the 60 charter members, Louise Schmidt, was on hand for the celebration. She recounted how difficult it had been to get the 60 charter members together for the founding meeting in Riverside on October 10, 1932. The chapter, named after a wilderness area it successfully fought to get established, now has more than 3,000 members in a vast two-county territory that stretches eastward from the Los Angeles and Orange county lines across mountain and desert to the Nevada and

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Arizona borders. Naturally, its chief conservation concerns are focused on the BLM Desert Plan and on other desert issues. The Chapter runs an active mountain and desert outings program and sponsors both leadership training and basic mountaineering courses.

## MUSIC TO OUR EARS

*Texas Oasis*, Bill Oliver's first album of environmental songs, is being offered by the Lone Star Chapter at \$8 plus \$1.50 shipping. Oliver was a big hit at the 1982 Sierra Club dinner in San Francisco. Among the album's 17 songs are "Shopping Maul," "Snail Darter Waltz" and "If Cans Were Nickels." Make your check payable to the chapter, and mail it to Record, Sierra Club, Box 1931, Austin, TX 78767.

## WAYS TO RAISE MONEY

Gifts to chapters or groups for nonlobbying purposes can be made through the individual-donor option that some of the United Way or Community Chest fund appeals offer. The San Francisco Bay Chapter has been using this method for obtaining non-lobbying funds. Payroll-deduction donations are designated to go to the Sierra Club

## SIGHTINGS



The Ohio Chapter's annual fundraising tour was a success, thanks in part to the appeal of John Muir's High Sierra, a film by Dewitt Jones (above).

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Foundation (which has IRS 501 c (3) non-profit status) and are credited to the chapter's Foundation account. This same system was used by the Angeles Chapter until this year, when United Way ruled that "there were more compelling needs in the community." Gifts to the Sierra Club Legal Defense Fund, however, were ruled acceptable. The chapter also has been able to raise significant sums through its Friends of the Angeles Chapter program, which has four categories of donors, from Supporter at \$100 to Benefactor at \$1,000.

## SPEAKING OUT

Ventana Chapter's Speakers Bureau has become an established provider of conservation-oriented programs for school, civic and church groups all around the Monterey Bay area. With many new volunteers joining, the bureau has revised its brochure to include an expanded list of some 30 available programs. Presentations, built around slides or films, run from 30 to 60 minutes. Topics run the whole environmental gamut—from hiking the Ventana, local conservation issues and Utah adventures to the sea otter, black holes and the weather. Bureau Chair Anne Cotton says the program has been effective in increasing the public's understanding of environmental issues and of the Sierra Club itself. For more information, write her at 1282 Castro Road, Monterey, CA 93940 or telephone (408) 372-2840.

## SENDING IN SIGHTINGS

Sierra Club members are encouraged to send in photographs of volunteers in action to our new Sightings Department. Please be sure to identify the activity, the chapter or group, and the individuals pictured. For reproduction purposes we can use only slides, not color or black-and-white prints. We'll print as many as we have room for and return all slides if a self-addressed, stamped envelope is enclosed.

## FOUNDATION GRANTS

The Sierra Club Foundation recently received a \$10,000 renewal grant from the Patrick and Anna M. Cudahy Fund in Wisconsin for the publication of a manual by the Community Energy Program. The Fund also received \$4,000 from the Edwin Gould Foundation for Children in New York to be used for the Club's local Inner-City Outings program in New York City. □

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**B**EING BORN, you might think, is easy. It's the most natural thing in the world, and because it is so natural we take it for granted. If you think about it, though, you will realize what a big event it is, and how much effort it takes.

For a bird, curled up tightly inside an egg, it is especially difficult. The baby bird has to do all the work without any help from its mother. And eggshells are harder than you think! The eggs of a mute swan (shown in these photographs), for instance, are so hard that raccoons, who are experts at stealing eggs, can't crack them. Imagine then what a struggle it is for the young bird when it's ready to break out of the shell!

Many unborn birds start peeping several hours, or even a day or two, before they are ready to crack open their shells. It is as if they are gathering strength and courage for the big moment. More important, they can also hear the occupants of the other eggs in the nest peeping and "talking back" to them. Often, chicks that have already hatched out act as a cheering section, encouraging the unborn ones to join them in the world.

The bird still in the egg will peck at the shell with its beak, but the beak of an unborn bird is usually soft and rubbery. Fortunately all unhatched birds, as well as some unborn reptiles, have tiny horns on top of their beaks that are called "egg teeth." An egg tooth is sharper and harder than a baby bird's beak, and without it the bird might never be able to crack its shell. Because that is all the egg tooth is good for, it disappears soon after the bird has hatched out.

The first crack in the shell is very tiny, but the first crack is the hardest one to make, and often the bird will rest for an hour or more before it continues pecking. After it starts pecking again, another hour or two might go by before the shell is broken much farther. To make things even harder, a bird must turn around inside the

A  
SWAN  
IS  
BORN

shell (have you ever tried to turn around in a sleeping bag when it was all zipped up?) because it usually makes a circle of breaks around the big end of the egg and then pushes the end off as though it were the cap of a bottle.

Once the bird has made cracks halfway around the shell, it usually works faster, with only short rests, pecking and pushing at the end of the egg. When the egg is cracked nearly all the way around, the baby stops pecking and begins pushing until the "cap" comes most of the way off.

You'd think the hard work is over now, but it's not.

The young bird must now untangle itself, because it has been folded up tightly inside the egg with its wings, feet and head wrapped around its body. The young bird's body is bigger than the hole it has made in the shell, so trying to squeeze out the end is no simple task. There are also parts of a protective membrane, the lining of the egg, still sticking to the bird, and that makes it even harder for the bird to move.

After a good deal of pushing and squirming, the baby bird suddenly pops out into the nest. It may try to lift its head right away, even if it is born with its eyes closed, as most birds are. A young swan, called a cygnet, opens its eyes at birth, but its head is too heavy to hold up at first, and it wobbles back and forth. Newly born birds are still covered with the waxy coating that protected them from getting wet inside the shell, but in just a few hours they start to lose the coating, and eventually they become fluffy and steady on their feet.

Some young birds spend quite a few days in the nest, being fed by their parents; others, such as cygnets and other water birds, begin exploring right away and finding their own food. Within a few weeks all young birds have grown so much and so fast that the day they broke out of the eggs seems long in the past. □

*Writer Don Stap and photographer John I. Ray have contributed natural history pieces to several publications, including Great Lakes Life.*

TEXT BY DON STAP AND PHOTOGRAPHS BY JOHN I. RAY



*A female mute swan, called a pen, is seen here nesting atop her eggs (left).*



*A cygnet (baby swan) is "pipping" — breaking open its shell.*



*The crack in the eggshell grows wider as pipping continues.*



*The cygnet's body begins to emerge from the cracked shell.*



*The young swan tries to get free of the eggshell fragments.*



*The newborn cygnet is free now, but too weak to hold its head up.*



*Fully emerged, head held up, the newborn cygnet (above) surveys its world. An adult male (right), known as a cob, swims nearby.*





## A HERITAGE TO HONOR

ANN RONALD

*John Muir and His Legacy: The American Conservation Movement*, by Stephen Fox. Little, Brown and Company, Boston, 1981. \$17.95, cloth.

"I wish JOHN MUIR were alive to help," said William Colby in 1925, as he rounded up Sierra Club support for a Kings Canyon park, "... but his prophetic voice still carries the gospel abroad and helps to carry on the good work." Colby's words might well sum up Stephen Fox's impressive study of the legacy left by environmentalism's first mentor and guide. *John Muir and His Legacy: The American Conservation Movement* traces that heritage in a spirited account of the men and women who, for nearly a century, have toiled to preserve our land.

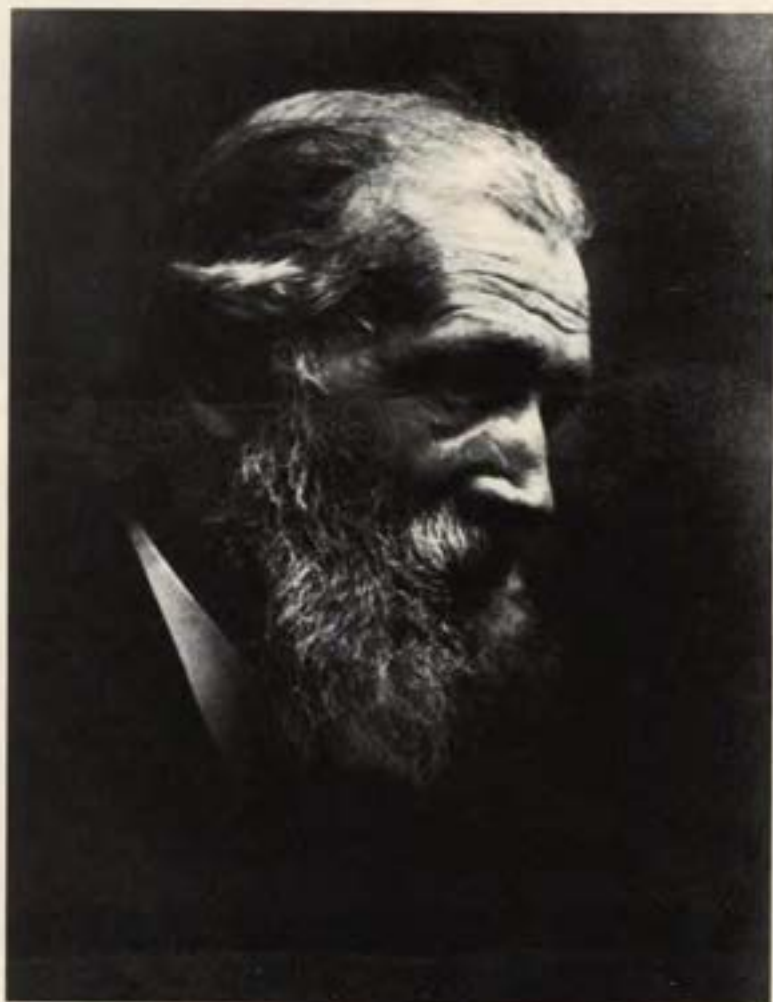
It all began with John Muir. The first quarter of Fox's book offers an intimate portrait of "the real father of conservation." We learn anew about Muir's boyhood years, a series of painful bondages followed by happier releases. Later we rediscover his California escapades, such as Muir peering down Yosemite Falls or climbing a tree to ride out a storm. We then track the budding naturalist north to Alaska and back home to the civilization of marriage and a somewhat settled career. We find new stories about him, too, since Fox had free access to previously unexamined papers and manuscripts. Emphasizing Muir's prophetic personality and unlimited imagination, Fox brings history to life.

Crucial to *John Muir and His Legacy* are the personalities who followed Muir, for Fox documents the history of conservation by characterizing the people who made the movement possible. He divides them into two camps. Many, amateurs like Muir, saw humanity as but one element of nature;

these were the preservationists, who rejected the right of human beings to dominate the environment. Others, professionals like Gifford Pinchot, believed in a human-centered universe and so were utilitarian in their notions about protective development. To give them their due, the professionals brought pro-conservation policies into the mainstream of American economic and political life. But, as Fox explains, "the role of the radical amateur was the driving force in conservation history. The movement depended on professional conservationists and government agencies for expertise, staying power, organization and money. The amateurs by contrast provided high standards, independence, integrity. Unhampered by bureaucratic inertia or a political need to balance constituencies and defend old policies, they served as the movement's conscience... in the tradition of John Muir."

What began as the work of an inspired few has now grown to enormous proportions—statistics show a 177-percent growth in the

membership of conservation organizations between 1966 and 1975. Fox, however, is concerned more with past than with present participation. Switching gracefully from coast to coast and decade to decade, he sketches a lively series of vignettes about amateur involvement. For example, readers meet Will H. Dilg, founder of the Midwest's Isaac Walton League, "a figure of urban sophistication" whose "favorite idiom was the expansive hyperbole of boosterism." We watch Rosalie Edge, "a blend of Queen Mary and a suspicious pointer," assault the Audubon Society and, as the first lady of conservation, direct her Emergency Conservation Committee crusade for 30 years. We see Bob Marshall, Ansel Adams, Rachel Carson, Barry Commoner and others in intimate close-ups that perceptively tie people and politics together. Another chapter evaluates the contributions of free-lance conservationists, men like Bernard DeVoto, Joseph Wood Krutch and Justice William O. Douglas, who affected public policy by the



John Muir 1838-1914

sheer force of their personalities and stature.

*John Muir and His Legacy* avoids descending to the level of gossip, however. Even Fox's stories of idiosyncratic or destructive clashes between organizations and people are judiciously kept in context. Whether he touches on a controversial and sensitive topic, such as David Brower's resignation as Sierra Club president in 1969, or describes less troublesome events, he maintains a strict and fair neutrality. Fox's job is that of impartial historian, arranging facts in perspective and ordering the shifting vagaries of time. For example, the reader watches the Sierra Club lose the battle to preserve intact the Hetch Hetchy Valley in 1913, then sees victory in a similar situation, 50 years later, when Congress vetoes construction of an Echo Park dam in Utah and passes the Wilderness Act of 1964. The reader observes, too, how the movement's focus shifts away from the wilderness toward humans, "the last endangered species." Fox describes how protests about pesticides and pollution developed into attacks on nuclear fallout and overpopulation; with the addition of "human dangers," conservation has evolved into environmentalism.

Fox's information is up-to-date, fresh, provocative. In fact, I would like to hear more. Because he selects examples from early preservationist confrontations and later ecological wars to examine in detail, he inevitably leaves certain other conflicts out. Frankly, I found his material so intriguing that I happily could have read another hundred pages.

Not only is the narrative as imaginatively related as fiction, but its insights are extraordinary. Fox's explanation of the transition to contemporary ecological concerns is particularly astute—what began as a "conservative" platform now operates wholly in a "liberal" context. His most original conclusion, however, comes in the final chapter. There he synthesizes the religious impulses behind conservationist beliefs, locating the true John Muir preservationist principles in Eastern or mystic thought while demonstrating that the doctrines of the Pinchot utilitarians grow naturally out of a Christian world-view. Fox sums up the debate as "a genuine quarrel drawn from genuine differences," one that reiterates "the historical tensions between the Judeo-Christian ethic and ecological forbearance," the source of our most serious environmental disputes.

But Fox never chooses sides. While he admits to conservationist sympathies, he denies any overt affiliations. Reconstructing history without prejudice, he fair-mindedly assesses the participants in the American conservation movement. In so doing, he produces a vintage blend of good scholarship and good writing. *John Muir and His*

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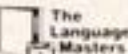
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Ann Ronald is the author of *The New West of Edward Abbey*. She teaches English at the University of Nevada at Reno.

## EXPLORING WATER PROBLEMS

DENNIS DRABELLE

*Water: The Nature, Uses, and Future of Our Most Precious and Abused Resource*, by Fred Powledge, Farrar, Straus & Giroux, New York, 1982. \$14.95, cloth. *Nor Any Drop To Drink*, by William Ashworth, Summit Books, New York, 1982. \$17.25, cloth; \$6.75, paper.

WATER, FRED POWLEDGE WRITES, is "the only substance on earth that can, and does, exist in all three physical states—liquid, gas, and solid—under normal conditions of climate." This versatility carries over into the realm of statistics: as anyone knows who has ever second-guessed the Corps of Engineers, you can fiddle with numbers until they prove almost anything about water. The following figures, however, are thought to be both accurate and politically neutral. The earth contains about 370 quintillion gallons of water, which boils down to about 85 billion gallons per person. Of this pool, however, only about half of one percent is available for human use. Appearing almost simultaneously, Powledge's *Water* and William Ashworth's *Nor Any Drop to Drink* explore—and deplore—the condition of the American share of that serviceable half-percent.

Their common conclusion is that we are squandering, misallocating and polluting our water to such an extent that we can no longer take its abundance and purity for granted. Ashworth points out that since 1900 water use in the United States has increased nearly four times faster than the population. The profligate American lifestyle is responsible for some of this disproportion, as is the intensive use of water in manufacturing and processing. Ashworth asserts that "the car in your driveway represents a water investment of about 100,000 gallons, plus another 200 or so every time you fill the gas tank." But above all, he attributes the alarming jump in water consumption to irrigation.

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but wonders can be grotesque. The Arizona desert now produces large amounts of cotton, one of the most water-intensive of all crops. More than half the water devoted to agriculture in California, water delivered largely by federal and state aqueducts at rock-bottom prices, goes to produce forage which is then fed to cattle trucked in from the Midwest. Water shortages are cropping up all over the West, and Ashworth is convinced that irrigation is "an edifice built on borrowed capital, and it is about to go bankrupt."

Both authors address themselves at length to the sorry state of the nation's depleted and polluted aquifers. All across the West these underground reservoirs are being breached and their contents consumed faster than they are replenished. At least one major aquifer—the Ogallala, which underlies most of Nebraska and parts of Wyoming, Colorado, Kansas, Oklahoma, Texas and New Mexico—has no replenishment rate. The Ogallala is a naturally closed system, its water the 3-million-year-old remnant of even older glaciers—"fossil water," as Ashworth calls it.

Those who protest the reckless pumping of the Ogallala Aquifer must meet the argument that since the water can't be replaced anyway, it might as well be used up. "The alternative," observes a New Mexico offi-


cial, "is to leave it underground and simply enjoy knowing it's there." Ashworth retorts that though using Ogallala water may not be foolish, depending on it is. "... [T]o knowingly build an economy around a precious resource that will, in the predictable future, not be there any longer is to build an economy that cannot survive. . . ." Above the Ogallala aquifer stand the ghost-farms of tomorrow.

Most aquifers, however, can be restored—that is, unless they fall victim to chemical pollution. Toxic wastes have been found in the groundwater of at least 34 states. In 1976, 500 wells on Long Island were examined; 36 had to be closed, and none was entirely free of contaminants. The pitiful truth is that when it comes to decontaminating aquifers there is no state of the art, not even the beginning of a technology fix. Ashworth laments that "as a people we have done so much with so little knowledge of what we were doing."

Though not quite the stylist that Ashworth is, Powledge also writes carefully, and he takes delight in lampooning the patois mumbled by those dam-building, river-straightening agencies, the Bureau of Reclamation, the Corps of Engineers and the Soil Conservation Service. The bureaucrats and legislators are wont to claim that their dams and canals will "enhance" the environment,

as if God created it bland. One of the best examples of such linguistic perversion occurs in the Pacific Northwest Electric Power Planning and Conservation Act, which directs the Bonneville Power Administration to manage the Columbia River so as to ensure that the region's fish and wildlife are "preserved, mitigated and enhanced." You can preserve a fish in the freezer, you can enhance it with tartar sauce, but mitigate it you cannot.

Powledge's book is the longer and more thorough of the two, and he can afford to dally in interesting tributaries. Take, for example, the western water doctrine of prior appropriation, which holds that the rights of earlier users come before those of newcomers. Ashworth abruptly evaluates the doctrine as "probably about as fair as any system for appropriating a scarce resource could be." This conclusion left me uneasy until I read Powledge, who took the trouble to elicit a sociological basis for the doctrine from a New Mexico official: "Look at it this way: Were it not for the doctrine of prior appropriation, there would have been no development out here. Grazing is about what you could have done. People are not going to come into a system like this, a semi-arid system, and spend money developing farms, or any enterprise that depends on water, if the latecomer can come take away



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the water supply on which his investment is based. So you just simply *had* to have the doctrine of prior appropriation in order to use this country and live in it." Powledge also covers topics, such as pork-barrel construction projects, that Ashworth skimps on or omits.

Both books are excellent, and the tempting course would be to give them a blanket endorsement. Yet by bringing in a third book, published last year, we can be more discriminating. Powledge is an easterner, and not surprisingly he tends to concentrate on that region's problems—Love Canal, Tellico Dam, New York City's sclerotic pipes. If they are your primary interest, *Water* is your book. For the problems of the West, the best book remains Philip Fradkin's *A River No More: The Colorado River and the West* (Knopf, 1981). And if you want a succinct overview of American water predicaments, you can't do better than *Nor Any Drop to Drink*. And that seems about as fair as any system could be for appropriating a scarce resource—the reader's time.

*Dennis Drabell is a lawyer and freelance writer. He currently is working on a book on the national wildlife refuges.*

## OF MEN AND MOUNTAINS

ROBERT W. CRAIG

*Savage Arena*, by Joe Tasker, St. Martin's Press, New York, 1982. \$18.95, cloth.

**M**OUNTAINEERING has given rise to an unusual literary phenomenon. No other sport engenders anywhere near the volume of prose and pictures that chronicles the adventures and disasters of the women and men who essay high and steep places. It is a literature that ranges from the most sparsely descriptive accounts of climbs to elaborate catalogues of expeditions, from poetic expressions of the mountain experience to a whole sub-species of writing that deals with the varied scientific components of mountains and men.

Mountaineering books are in very large part written by the people who make the ascents that become the inspiration for the writing. In moments of cynicism an outsider might wonder whether the writing is not, deep down, the reason for climbing. In all, the range of emotion, style and clarity one encounters in this genre extends from lugubrious to egocentric, to mystical, to humorous and even to sublime.

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Joe Tasker, a British climber of rare achievement who perished high on Everest in May 1982 with his climbing partner, Peter Boardman, wrote a book shortly before his death that must be acknowledged as one of the finest, most sensitive and personal statements we have about going into the mountains. *Savage Arena* begins with a description of reading aloud at mealtimes, in a Catholic seminary. The story? An account of the ascent of the North Face of the Eigerwand, the great classic wall in Switzerland. From those readings, Tasker, a novice of seven years' training, is seen to be transformed from a candidate for the priesthood into a mountaineer who will soon engage the Eiger in winter with his companion, Dick Renshaw, and then go on to a series of stunningly difficult alpine-style ascents in the Himalaya.

The relating of these adventures is deceptively simple, for Tasker understates much of the intense discomfort of doing extremely technical climbing in storms at high elevations. Almost in counterpoint, the matter-of-fact chronicling of personal feelings about his climbing mates, his self-doubt, and his reflections on the meaning of the climbing experience give the book a haunting immediacy, candor, and common sense that this reader has not encountered before in mountaineering writing.

Speaking of a terrible ordeal above 25,000 feet on K2, a circumstance similar to one I experienced 27 years earlier, Tasker writes:

*I felt no wish that we had never started on the mountain in the first place, but now that we were reasonably hopeful of living, I resented the long days of hardship that remained before we could relax. Even when our future had seemed bleak, there had been no space in my mind for consideration of anything other than how we could extract ourselves from our predicament. I knew then that I could not pretend to myself that I should have chosen some other way of life because I had had doubts before and had returned again and again to the mountains. Dreadful as our situation was, we had chosen to be in it.*

Safely down and at base camp on the Godwin Austen Glacier several days later, Tasker reflected:

*My brain drifted in an intoxication induced by the privation; exhaustion was like an old acquaintance. I wanted to get home as soon as possible but I could look at my wishes calmly without the agitation I would once have felt. I knew that this expedition had affected me more profoundly than any other experience in the mountains; I shared the feelings of the Samurai brought back honourably from his suicide and knew the exalted*

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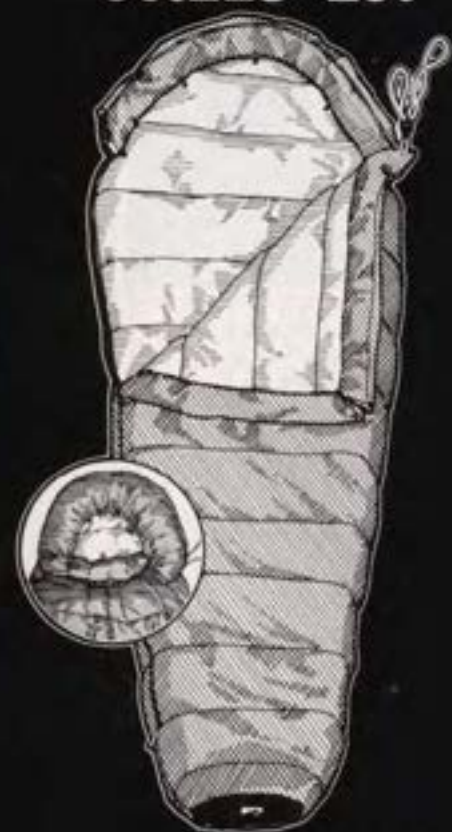


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state he would have been in on his reprieve. A whole new life was mine, as if the past was no more. I felt beyond the reach of anything as if I had total self-containment. I felt wealthy, blessed with fortune beyond measure. The body I walked in was weak but it did not matter, the pain of movement was only another proof that I was alive, a sign of new life. When we stopped for the night, an unplanned halt in the schedule of our return, it made no difference to my peace of mind. As in the euphoria induced by a drug, I could be content to pass the time contemplating the day going by.

What had been experienced was one of those desperate struggles for which K2 has become famous, in which Tasker and his partners, avalanched in their tents at 26,000 feet, a long, short way below the great summit, had to fight their way down 7000 dangerous feet to the Godwin Austen Glacier. Tasker's narration of this episode evokes the blend of hope and despair that rides on the shoulders of all climbers as they endeavor to climb down toward safety and home. Tasker seems, above all climbers I have read, to understand the ultimate irony of nature: the no-win character of victory; the triumph is somehow preserved only in the context of one's self.

*Savage Arena* is a series of accounts of the dramatic events in Tasker's brief, remarkable climbing career. There is a continuity between the various ascents, beginning with the Eiger Nordwand in winter, the Southeast Ridge of Dunagiri, the West Face of Changabang, the failure and tragedy on the West Face of K2, Kangchenjunga from the north, and failure again on K2 by the West Face and on the Abruzzi Ridge. The continuity lies in the strictly disciplined alpine style that Tasker and his companions employed on high and difficult peaks, and in the companions themselves. Tasker's climbing partners were his friends, and *Savage Arena* is a gathering ground for a number of England's finest climbers (plus one of France's—Georges Bettembourg), including Chris Bonington, Peter Boardman, Dick Renshaw, Paul Braithwaite, Doug Scott, Nick Estcourt and Tony Riley.

The quality of their friendship in the mountains and under trying circumstances may be the most eloquent facet of *Savage Arena*. Nick Estcourt's death in an avalanche on the West Face of K2 and the dilemma of whether to continue are described with compassion, sensitivity and frankness that go to the heart of the meaning and values of expeditionary climbing and, in the last analysis, of climbing itself. The decision by majority rule of the team not to go on with the expedition, the second thoughts after so much effort and expense, and the



The route that Joe Tasker and his companions followed in their two unsuccessful attempts to scale K2, the world's second-highest mountain.

agonizing concern of breaking the news to Estcourt's family are dramas within the central drama of life and death in high places, which in retrospect seems to have been the central theme of Joe Tasker's brief existence.

Of the seven central figures in these pages, only four—Bonington, Braithwaite, Renshaw and Scott—remain. The increase of fatalities among well-qualified climbers doing hard routes in the Himalaya has been disturbing and has caused a number of good mountaineers to question the worth of the effort. Still, hard climbing on alpine peaks has always taken its toll, and certain rules under which climbers go forth must be clearly understood.

Tasker's closing lines in this memorable book say a good deal about the philosophy underlying those rules, which, when one considers them, aren't bad rules for life itself:

*K2 has highlighted the extent to which we were prepared to push ourselves, and it must have seemed from the outside that we were suicidal or emotionless creatures. But we were only taking risks because the end we hoped to reach seemed worthwhile—reaching the top of the second-highest mountain in the world purely by our own efforts—and so too with any objective in the mountains, the risks are only run because one believes the correct calculation has been made of how to avoid them in reaching a worthwhile goal. Rather than being suicidal, the climbers I know love life and fight furiously to hold on to it, and the same restless energy and enthusiasm helps them overcome the problems of*

everyday life and is transmitted to those around them.

In some ways, going to the mountains is incomprehensible to many people and inexplicable by those who go. The reasons are difficult to unearth and only with those who are similarly drawn is there no need to try to explain. . . .

The rules are fairly simple: Strength and technical ability, applied with sound judgment against physical obstacles of ice, snow and rock in reasonable weather and with adequate time, will provide most climbers with sufficient margins of safety to climb and return from even the highest mountains. There will always be the unpredictable avalanche, sudden storm or slip that claims the most talented and life-loving climber. But that leads us back to the infinite regress suggested in the deaths of Tasker and Boardman. If one asks, "Why do they go to the mountains in the way that they do?" I must humbly submit, "Because they have to."

*Robert Craig, president of the American Alpine Club, led an expedition to Mt. Everest's West Ridge in March of this year.*

## JOB BLACKMAIL

JAMES M. PRICE

*Fear at Work: Job Blackmail, Labor, and the Environment*, by Richard Kazis and Richard L. Grossman. Pilgrim Press, New York, 1982. \$10.95, paper.

**D**URING THESE TIMES of high unemployment, it's not unusual for corporations to foster the idea that communities must make concessions in order to attract new jobs or keep existing ones. Appropriately termed "job blackmail," this not-so-veiled threat reflects the desire of some employers to circumvent environmental regulations or, at least, to make environmental protection and environmentalists the scapegoats for justifying exploitive corporate decisions. Practitioners of job blackmail would like us to believe that jobs and maintaining environmental quality are mutually exclusive.

Richard Kazis and Richard L. Grossman of Environmentalists for Full Employment expose this practice in their well-researched and documented book, *Fear at Work: Job Blackmail, Labor, and the Environment*. They assert that jobs and environmental

quality are basic requirements of a just society. As a healthy environment is essential to protect workers and citizens, secure and decent jobs for all who want to work are essential to environmental protection. Unfortunately, the greater the unemployment, the greater the vulnerability of workers and communities to environmental job blackmail.

The authors point out that few jobs have been lost to environmental regulations over the past decade; in fact, a whole pollution-control industry has been created. Environmental damage, occupational disease and accidents, on the other hand, cause serious problems for the American economy. For example, between 6 and 8 million Americans are injured on the job each year, including 2.5 million disabled and 14,000 killed. The poor—particularly the urban poor—bear a disproportionate share of the cost of pollution.

Kazis and Grossman also discuss the philosophy behind the social regulation of the marketplace and the tactics of firms seeking to avoid environmental regulations. They point out that Congress or federal agencies usually enact regulations regarding the conduct of corporations in the marketplace when certain private actions are proven to conflict in some way with the public interest. Some firms want us to believe their private interest is synonymous with the public interest, and that policy-making is solely the purview of management. They strongly resist increased worker or citizen involvement in production or investment decisions, especially regarding environmental issues. These firms try to avoid environmental compliance by threatening to leave the community and cancel or delay plant construction—all of which would translate into a loss of jobs and tax revenues. In addition, some companies prefer to withhold information that might help citizens and workers distinguish between what is or isn't possible for the business to accomplish in order to comply with environmental regulations. A firm using this ploy will claim it can't meet a proposed standard because the necessary technology does not exist, or the cost is prohibitive—and may even drive the company out of business. Ultimately, management will announce that the firm can comply with regulations but at high cost to consumers. And in the background lurks the threat to lay off workers.

According to the authors, the Reagan administration's efforts to weaken environmental regulations are unprecedented. The Regulatory Relief Task Force, under the guise of "regulatory relief," has identified nearly 60 major environmental, health, safety and other regulations for "reconsideration," while blocking the implementa-



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tion of pending regulations and terminating some outright. The administration has proposed that the Office of Management and Budget be given increased authority over the approval of federal regulations, thus diminishing opportunities for citizens and workers to participate in their formulation. Furthermore, in contrast to the process required for other industry regulations, the number of steps required to set up an environmental regulation may be dramatically increased in an effort to hobble the process in red tape.

Kazis and Grossman assert that environmental regulations have not been significantly responsible for inflation, declining productivity or the lack of innovation in American industry. The well-worn argument that to be against unlimited growth is to be for "no growth"—that unrestrained growth benefits society—ignores public costs for certain types of growth. The authors point out that such thinking frequently discounts who will benefit from and who will pay for growth in a specific area.

According to the authors, the histories of the labor and environmental movements reveal that both have fostered common goals of greater democratic participation in economic and political decisions, changes in national priorities and values and improvements in the American standard of living and quality of life. Both movements have organized broad public support and have had to deal with companies that have ignored the social costs of their business activities. Contrasting case studies of the interaction of labor and environmental organizations in the Redwoods National Park expansion and Steelworkers Local 1010 and the Bailly Alliance vividly reveal how labor and environmental groups have frequently been at loggerheads—but implicit in these studies is the understanding that the two can and must work together.

The message in *Fear at Work* is inescapable. Labor and environmental groups are most effective when fighting side by side for jobs and the environment—inseparable and interrelated. To effect this new union, both sides must build coalitions and resist being divided and conquered; they must do their homework in digging out the facts; and they must realize that issues relating to full employment and worker and community access to corporate information are environmental issues as well as labor issues. It also means that environmentalists must take the offensive and demonstrate that we care about jobs, the poor and a healthy environment. We must not let others be successful in tagging us as elitists who don't care about people. Our proposals should address the jobs question up front and sensitively. We should also seek to build alliances, such as

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the OSHA/Environmental Network, to help educate communities about job blackmail and right-to-know legislation, which requires employers to inform employees and citizens about hazardous substances in the workplace.

Environmental and labor organizations should play active roles on local industrial development boards and in formulating industrial recruitment programs to ensure that the firms recruited are those with good environmental records. Evidence of job blackmail should weigh heavily in determining whether or not to recruit a company. Finally, environmental and labor organizations should involve themselves in formulating positive policies for sensitive economic development, labor-force training and the siting of industrial facilities, which should be compatible with local land capabilities and the preferred lifestyle of local citizens. Thus, the needs of the community as well as the needs of the firm should be considered in selecting corporations for recruitment to local communities. *Fear at Work* will go a long way toward raising the consciousness of environmentalists and rank-and-file labor union workers about their need to work together. It is must reading for urban environmental organizations and union locals.

James M. Price is the Sierra Club's Southeast Representative.

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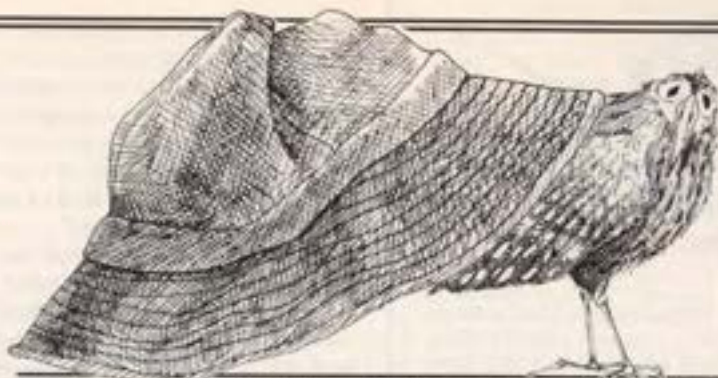
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*Down the River*, by Edward Abbey. E. P. Dutton, New York, 1982. \$6.95, paper.

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the original Indian and animal populations.

Nevertheless, his essays are meant as "antidotes to despair." "Be of good cheer," he tells us, "the military-industrial state will soon collapse. Meanwhile we must do all in our power to oppose, resist and subvert its desperate aggrandizements. As a matter of course. As a matter of honor."

Certainly not everyone would agree—for instance, the reader who wrote that "if Mr. Abbey is so in love with wilderness, he should take his beer cans and his warped head and go far back in the hills and stay there." Or another who suggested that Abbey "purchase ten six-packs of Schlitz, enclose himself in his garage inside his pickup truck, start the motor and see if he can drink all the beer."

In his lead essay, Abbey brings Henry David Thoreau to life, entwining the adventures of a river trip with reflections on electoral politics and an account of Thoreau's life and works, based on quotations from a "water-soaked, beer-stained, grease-spotted, cheap paperback copy of *Walden*."

Although Thoreau was considered a minor writer by his peers, the author insists that "in the ultimate democracy of time," he has outlived his contemporaries, becoming more important with each passing decade.

"The deeper our United States sinks into industrialism, urbanism, militarism," Abbey asserts, "the more poignant, strong and appealing becomes Thoreau's demand for the right of every man, every woman, every child, every dog, every tree, every snail darter, every lousewort, every living thing, to live its own life in its own way at its own pace in its own square mile of home. Or in its own stretch of river."

Leaving the river for a time, the reader is bounced through the Utah desert in a pickup truck for a look at the land to be affected if the proposed MX missile system is built. Although it seems to be a free and open area, Abbey insists it is already used to capacity by ranchers, farmers, miners, forest rangers, inspectors of sunsets and by what remains of the original populations of Indians and animals.

The labor, brains, materials and money required to build the MX or other projects, he tells us, "must be subtracted from resources that might otherwise be expended upon food, clothing, shelter and, who knows, even love."

The Kremlin and the Pentagon, he says, are two malignancies on the body politic. "Mankind will not be free until the last general is strangled with the entrails of the last systems-analyst." A lunatic armed with a rusty axe could create terror in any decent community, we are told, but "for real lunacy on the grand scale" you need institutions such as the Kremlin and the Pentagon, fully staffed with thousands of technicians, en-

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gineers, administrators and the like.

Abbey's review of Robert Pirsig's *Zen and the Art of Motorcycle Maintenance* is among the lightest of his essays. He actually claims to have subcontracted the writing to Dave Harleyson, a friend from the Southern Arizona Road Huns ("the large red-bearded gentleman at the pool table, a tattoo of a rattlesnake on his left arm, wearing purple shades, a sleeveless shirt, a Levi's vest with a dragon embroidered on the back, original blue jeans dark with grease, and black engineer's boots.").

Abbey, or at least Dave, skips over *Zen's* philosophical content, focusing instead on the mechanics of motorcycle maintenance. Pirsig is taken to task for oiling his chain too much, needlessly laboring over the removal of a broken screw from the engine block, forsaking the torque wrench, and similar heresies. Those serious about motorcycles, Dave says, should forget Pirsig and get regular service manuals for their particular bikes instead.

Threaded through the essays, surfacing again and once more, is an insistence that we save nature and wilderness. "It is my fear," Abbey writes, "that if we allow the freedom of the hills and the last of wilderness to be taken from us, the very idea of freedom may die with it."

People flee the cities for recreation in the wilds, he says, to rediscover their preindustrial freedom, "our basic heritage of a million years of hunting, gathering, wandering." The elemental impulses still survive, he maintains, "suppressed but not destroyed by the mere five thousand years of agricultural serfdom, a mere two hundred years of industrial peonage, which culture has attempted to impose on what evolution designed as a feeling, thinking, liberty-loving animal."

Taking the wilderness concept a step further, Abbey calls for wild areas where, through general agreement, none of us enters at all. Such "absolute wilderness," he suggests, might be "justified by our recognition of the rights of other living things to a place of their own, a role of their own, an evolution of their own not influenced by human pressures." Even nonliving things—boulders or entire mountains—could be left alone "for a few centuries now and then."

Abbey's treatment of other environmental issues ranges from the philosophical and analytical to the outrageous. Perhaps his deepest probe of environmental issues occurs in an essay on a recent book by René Dubos, in which Abbey criticizes, among other things, Dubos' support of industrialized farming with its mass production of food and fiber through mining, not wooing, the land. Farming as a self-sustaining, symbiotic relationship between people and the

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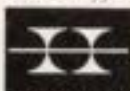
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earth has been staunchly defended by conservationists, Abbey says. Monoculture farming, by contrast, produces environmental drawbacks by grossly simplifying the natural order, "satisfying perhaps to the taste of a geometer, but not to the livestock grower or traditional farmer."

Keeping science and technology our servants and not our masters, he writes, means "defending the family farm against the mechanized monoculture of agribusiness; defending the family ranch against the strip-mining company; defending the selective cutting of sustained-yield forestry from the clear-cutting of quick-profit wood products corporations; defending the small town against the spreading BLOB of suburbia; protecting our surviving rivers from the dam-building mania of the politicians; saving our hills and fields from the aggrandizement of the extractive industries."

Elsewhere, Abbey repeats some of his now-familiar suggestions for improving national parks, this time focusing on the Grand Canyon. Banning motorized aircraft over and within the canyon and traffic on the roads along the rim are recommended first steps. Beyond that, he suggests tearing down the man-made structures now cluttering the Bright Angel trailhead—hotels, gas stations, laundromats, jails and curio shops—and rebuilding the whole mess, if it must be rebuilt, about ten miles back toward Flagstaff.

A clean environment and vigorous outdoor activity will lead to health and long life, Abbey tells us in his essay entitled "Notes From a Cold River." Despite the claims of some medical technicians, "it is not more and newer drugs we need, not better living through chemotherapy, but rather clean air. Clean water. Good fresh real food. And plenty of self-directed physical activity."

In addition to the politics and philosophy—actually as occasions for them—*Down the River* presents insights into nature and offers numerous action-filled tales of boating and rafting the Green, the Colorado, the Tishenshini in the Yukon and other good rivers.

Abbey praises the bears, the birds, the mountains, all of nature. "If there is a Heaven, an ideal realm beyond space and time," we are told, "it must contain the hermit thrush. Otherwise what good is it? And there must be trees too, of course. And mountains. And a sun that sets each evening and rises each morning. And winding through the woods a trail with pine needles, stones, oak leaves, fresh bear shit. Naturally." □

*Tom Galazen is a Wisconsin-based environmental activist and freelance writer who focuses on energy and outdoor topics.*

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**Q** *I'm not trying to be funny, and I would like an answer. Is Sierra magazine biodegradable?* (MIKE KENLEY, PLACERVILLE, CALIF.)

**A** Yes, like most paper products, *Sierra* is biodegradable. A question more frequently asked, however, is whether the magazine can be recycled. Again, the answer is yes. When we were contemplating expanding the magazine about five years ago, we checked this point with our printers; they said the glossy paper used for magazines is most often recycled into heavier paper items such as wallboard or cardboard boxes for shoes.

Unfortunately, it seems that many recycling centers will not accept glossy magazines. If you run into this problem, we suggest that you recycle your old magazines in a more immediate way by giving them to hospitals, nursing homes, prisons, or other institutions where people will be eager to receive them.

**Q:** *I would like to know if the Sierra Club has stock in any corporation. Also, does the Club accept donations from such companies as Exxon and the National Distillers and Chemical Corp. that contribute to the pollution of the environment?* (RANDY JONES, BIRMINGHAM, ALA.)

**A:** Since even the U.S. government polutes or fails to act in the public interest to halt pollution, no investment—even in cash—can be considered absolutely "clean." Environmental organizations must balance this state of affairs against their obligation to protect their assets by investing wisely and prudently so that those assets and their earnings can be committed to programs that protect the environment. As a practical matter and a general operating principle, the Club and the Foundation avoid investing in companies with poor records in pollution control. In addition to the obvious ethical problems of being associated with such companies, the Club and the Foundation believe there may be a correlation between good management, high profits and lower pollution on the one hand, and poor management, low profits and high pollution on the other.

The same general principle applies to the receipt of gifts from corporations: The

*Sierra* encourages its readers to take this opportunity to learn more about the Club and its activities. If you have a question you'd like answered, send it along with your chapter affiliation and address to *Sierra Q&A*, 530 Bush St., San Francisco, CA 94108. We will respond to as many questions as space allows.



ILLUSTRATION BY BOB CLAN

*Sierra* Club and the *Sierra* Club Foundation do accept gifts from corporations, but their respective boards have made it very clear that no corporate gift can be accepted if it has "strings" attached that might compromise conservation efforts. In addition, any corporate gift to the Club in excess of \$20,000 in one year must be approved by the Club's board before it can be accepted. Within these guidelines, the Club and the Foundation feel that the use to which the funds are put is far more important than the source of the gift. Current corporate donors include Exxon (for the international program), Atlantic Richfield Foundation (service trips), Cornnuts, Inc. (general *Sierra* Club Foundation support) and Penn Central Corp. (general Foundation support).

As a general rule, both the Club and the Foundation sell gifts of stock as soon as possible after receiving them. This does not mean that the Club or the Foundation in any way discourage donations in this form—often the gift of stock is advantageous to the donor. Nor does this practice mean that sometime in the future both boards may see it as economically advantageous to invest in

stocks. But for quite some time, the Club has not invested in the corporate stocks or bonds.

**Q:** *Can you please tell me which other environmental groups the Sierra Club endorses?* (GREG WINTERS, PASADENA, CALIF.)

**A:** The Club works closely with a number of environmental organizations at the national level and has friendly relations with all such organizations, according to Mike McCloskey, the Club's executive director. The Club has participated in countless coalitions on environmental issues or campaigns and is quite ecumenical in joining umbrella groups that exist to foster closer relations and cooperation among environmentalists. However, the Club does not formally endorse any group, nor do other groups make a practice of this. The diversity of the environmental movement is one of its strengths; people are brought into it from many different vantage points and centers of interest. We encourage people to

associate themselves with those groups that most closely correspond to their interests.

**Q:** *Why did the Sierra Club support the extension of the treaty that allows the killing of seals in the North Pacific? I thought the Club was in favor of protecting marine mammals.* (WANDA CAPLINGER, COLUMBIA, PENN.)

**A:** Robert Hughes of the Club's Wildlife Committee explains that the Club supports the North Pacific Fur Seal Treaty primarily for two reasons, even though it allows for the controlled killing of seals. As one of the most successful wildlife-management treaties in existence, it has been directly responsible for the dramatic increase in seal populations in the North Pacific. In danger of extinction when the treaty was developed in 1957, the fur seal herds have now reached healthy sizes. The Club supported the extension of the treaty because abandoning it would once again allow uncontrolled hunting of the animals at sea. Called pelagic sealing, this practice is wasteful, since a large proportion of the killed seals sink before they can be collected. It was this form of sealing that decimated the herds prior to the signing of the treaty.



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