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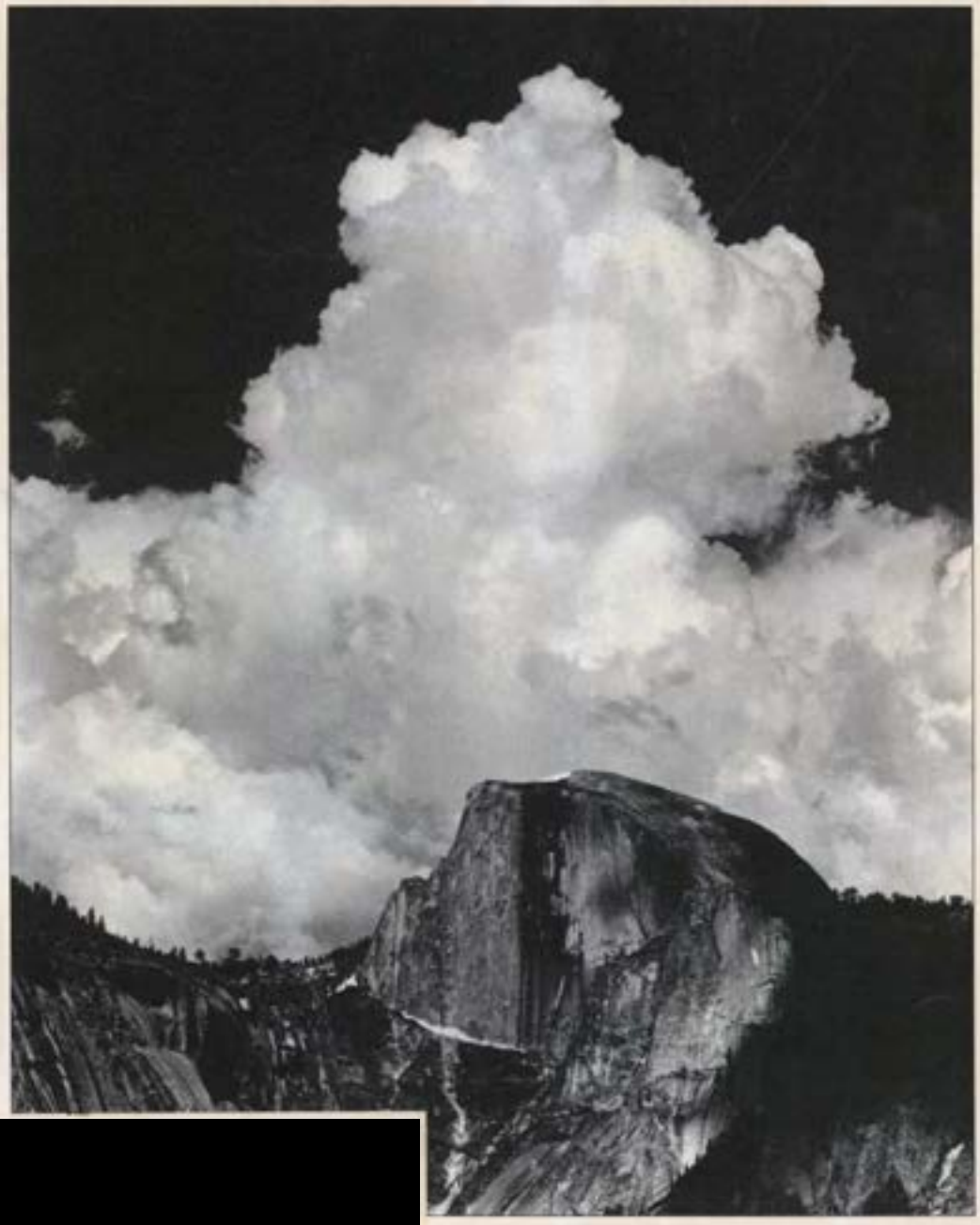

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FEATURES

DEPARTMENTS

COVER: "Half Dome, Thunderclouds, from Glacier Point, Yosemite Valley 1947." Photography by Ansel Adams. Courtesy of the Ansel Adams Publishing Rights Trust. All rights reserved. For a tribute to Ansel Adams, turn to page 32.

Sierra (USPS 495-920) (ISSN 0161-7362), published bimonthly, is the official magazine of the Sierra Club, 530 Bush St., San Francisco, California 94108. Annual dues are $29. Members of the Sierra Club subscribe to *Sierra* through their dues. Nonmember subscriptions: one year $10; three years $28; foreign $14; single copy $2. Members may purchase additional one-year subscriptions for $8 (send to 530 Bush St., Attn: Subscriptions). Second-class postage paid at San Francisco, Calif., and additional mailing offices. Reprints of selected articles are available from Sierra Club Information Services.
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Chesapeake Bay, page 14.

Why Congress Matters, page 43.

The Last Frontier, page 50.

Canoeing Catastrophe, page 56.


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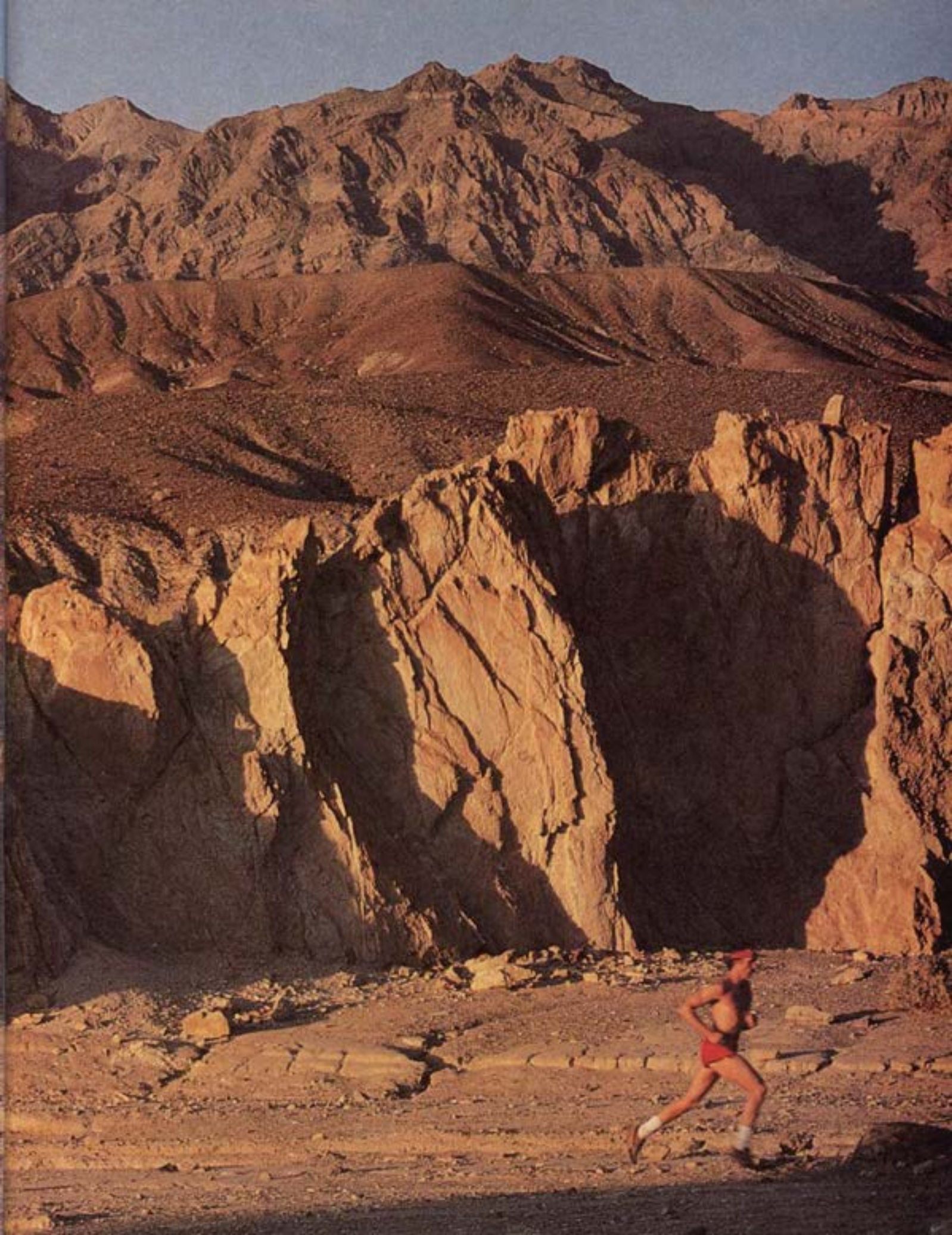

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HITCHED TOGETHER

Carl Pope ("Ronald Reagan and the Limits of Responsibility," May/June 1984) did a fine job of defining the Reaganite attitude against a "concept of responsibility," a "concern for the future," and "the troublesome belief that everything is hitched together."

But Pope missed at least two such interconnections. First, while he noted that "an acid rain cleanup program would force *private companies* [my emphasis] to pay for the protection of community resources," Pope failed to note that this would be hitched together with a cost pass-through to utility customers, increased reliance on nuclear power, joblessness, and the creation of ghost towns in large areas of six states.

Second, Pope failed to note the ultimate interconnectedness of U.S. military policies with the environment. The Reaganite notion that we need not worry about future generations has less to do with James Watt's far-fetched construct of an imminent "return of Jesus Christ" than with the high probability that Reagan, if reelected, will lead us to nuclear oblivion. I wish that the Club's Political Director would expose that interconnection more forcefully. The environment can face no more serious threat than war.

Michael Rice
Springfield, Ill.

I thought Carl Pope's article was excellent. The harm being done to the United States and the whole world by this administration's foreign policy compounds its evil domestic policy tenfold. By its insane fear and hatred of the Soviet Union, we have been brought in just three years to the brink of a war that will destroy the world. Heaven help us if we are subjected to another four years of it.

J. M. Eakins
Navarro, Calif.

Carl Pope's article deals largely in prophecy about a second term for Ronald Reagan. Few people are equipped to deal in prophecy. It smacks in this case of prejudice, and anyone can deal in that!

Even a President can be influenced by a friendly, reasoned argument. Equally, he can be turned off by unfair attacks by totally partisan persons.

I recall when the Sierra Club was doing a great deal for conservation, though the membership was small. Now it seems to have gone from lobbying to its present blatant partisanship. I challenge the Club—which I joined long ago—to get rid of its urge to be nasty, and to return to its original stance. Both the country and the Club will be the better for it.

Betty Ramseier
Berkeley, Calif.

As a Sierra Club member of some 16 years' standing, a veteran of environmental campaigns from Save the Bay to acid rain, a former assistant leader on backpacking trips, and a registered Republican, I take strong exception to the Club's violent attacks in print and otherwise on the present administration. I, too, strongly disagree with the Reagan environmental program. However, unlike the armchair environmentalists who in the last decade have turned our Club into a virtual arm of the Democratic Party, I believe there are other issues that must be taken into consideration in choosing leadership—and on balance I think there is no doubt that President Reagan comes out far ahead of any Democratic challenger.

More fundamentally, the Club must surely take a more balanced approach. Politics is the art of compromise, and a zealous, holier-than-thou attitude is counterproductive and alienates political allies. I seriously question whether the Club ought to be in the business of making political endorsements at all, although certainly we are entitled to rate the candidates environmentally. I suggest that we are otherwise in danger of being blindly opposed to progress rather than opposed to blind progress.

Richard P. Sybert
Los Angeles, Calif.

SOUTH CAROLINA WETLANDS

"Blind Ambition" by Jane Lareau (March/April 1984) is both simplistic and selectively documented. One would never suspect from reading the piece that the very legal proceedings to which Lareau refers are full of testimony by well-qualified wildlife biologists who favor selective restoration of some diked areas previously used (for most of 200 years) for the cultivation of rice.

Obviously, such biologists would not favor anything affecting free tidal flows in prime estuarine nurseries. Like Lareau, they are familiar with the great work of our southeastern saltmarsh researchers. But—as Lareau does not make clear—the fact is that

virtually no rice was ever cultivated within impoundments in our estuarine marshes.

If Lareau and some scientists are not impressed by the potential values, within the entire biological spectrum, of selectively permitted rediking, it is of course their right to make their viewpoints known to the South Carolina Coastal Council. But all concerned would be well advised—instead of questioning motives and casting innuendos—to seek friendly and open-minded dialogue with those interested in legitimate natural-resource uses for old ricefields (such as endangered species protection, aquaculture, and, yes, even waterfowl hunting). This would help create a united front against the real enemies of the natural environment within our state's nationally important coastal zones: waterfront real-estate development and air and water pollution.

Peter Manigault
Charleston, S.C.

Jane Lareau responds:
Indeed there was extensive rice culture in the upper portions of South Carolina's estuaries, which, while not of the same salinity as the lower estuaries, are still estuaries by any other name.

At issue in my article is the fact that highly productive natural areas are proposed for conversion into completely different unnatural systems. This calls for a tradeoff in productivity, and the jury is out as to whether the productivity of man-made controlled impoundments is as beneficial to the public as that of the natural system. The Sierra Club's position is that no one yet knows for certain which system is more desirable, in the long run, for the public good. Extensive research is now being conducted on the subject, and the Club is simply asking that no new areas be impounded until this data is in—especially in light of the fact that the state already has an abundance of existing impoundments, some of which are not being managed to their potential.

One More Bike Tip

Although Ted Eugenis's article on bicycles ("Tips From a Spokes Person," May/June 1984) was informative and well-written, it is out of date—like writing about backpacks without considering internal frames, or about hiking shoes without mentioning the new lightweight innovations.

There is a new bicycle on the scene. While it can be used off of roads and paved trails and therefore has environmental impact, it should not be ignored as if it did not exist. Over the last 40 years I have had seven bicycles: two balloon-tire models, three 3-speeds, and two 10-speeds. I tend to concur with Eugenis's bias toward 3-speed bikes for the reasons that he outlines; however, for many of the same reasons the "new" bike is an even better choice. It is much more comfortable and stable than my old 10-speed, and just the thing I need when there is no curb cut, or when I encounter such urban hazards as rough pavement, chuckholes, or broken glass. These new "mountain" bikes are worth looking into.

E. M. Risse
Reston, Va.

Wolfgang Kaehler

Best of Both Worlds

With regard to "Reprieve for Minnesota's Wolves" (March/April 1984), I say to hell with the livestock! It is certainly easy enough to breed more sheep and cattle, but where are we going to get more wolves? (Especially since we've already killed off most of them.)

Anyway, those ranchers are being compensated at the unbelievable rate of $400 per animal lost to "predation." What are they complaining about? They've got the best of both worlds!

Myrna M. Barnes
Far Rockaway, N.Y.

Too Many Issues?

I have been a member of the Sierra Club since 1970, and I very much support the Club's conservation activities. What I don't understand is why the Sierra Club dilutes its strength by chasing secondary issues such as the recent CWIP legislation ("Counter CWIP: Who'll Pay for New Power Plants?" May/June 1984).

It seems to me that if we have to stick our fingers into everybody's pie we will lose sight of our prime mission. I am active in several of the local activity sections (RCS, PCS, backpacking), and rarely do I meet a member who feels that we should try to become a consumer organization that chases utility rate-making legislation.

Stanley Vejtasa
Palo Alto, Calif.

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Compromise Releases Wilderness Bills

A three-year impasse over wilderness lands was broken in May when House and Senate leaders compromised on the question of "release"—that is, when nonwilderness areas can again be considered for designation. To the satisfaction of environmentalists, the agreement stipulates that the wilderness option be reviewed when forest-management plans come up for revision on a 10-year cycle.

The compromise immediately freed several bills that had been held in the Senate Energy Committee pending resolution of the release controversy. Shortly before adjourning on May 24, the full Senate passed by voice vote six long-awaited state-wilderness bills that embodied the new compromise. President Reagan is expected to sign all of the bills.

- Oregon: The Senate-passed Oregon bill would designate 849,000 acres of national-forest lands as wilderness and protect another 86,000 acres as a national recreation area. Although this compromise represents considerably less than the 1.1 million acres approved in March of last year, the House accepted the Senate-modified version on June 6. A separate bill adding the Owyhee and the Illinois rivers to the National Wild & Scenic Rivers System was also passed.
- Washington: Roughly 1.03 million acres of national-forest lands would be designated as wilderness by the Senate bill. The House approved its version of the legislation on June 18.
- North Carolina: Both the House and the Senate have now approved a measure designating approximately 69,000 acres as wilderness and 23,000 acres as wilderness study areas in three national forests.
- New Hampshire: Adopted by the House in November 1983, legislation designating as wilderness 77,000 acres in the White Mountain National Forest has now passed the Senate. The bill also directs the Forest Service to consider the White Mountains' 27,000-acre Kilkenny area for its wilderness potential and authorizes a Wild & Scenic Rivers study for Wildcat Brook.
- Vermont: The Senate joined the House in designating 41,000 acres of wilderness in Vermont's Green Mountain National Forest.
- Wisconsin: Bills setting aside as wilderness 24,000 acres in the Chequamegon and Nicolet national forests have been approved by both the House and the Senate.

Bear Trap Named as First BLM Wilderness

Bear Trap Canyon in southwestern Montana was dedicated on June 1 as the first component of the wilderness system to be administered by the Bureau of Land Management (BLM). One of four units of the recently designated Lee Metcalf Wilderness, Bear Trap Canyon is a 6,000-acre area noted for whitewater rafting, trout fishing, and the spectacular 1,500-foot cliffs bordering the Madison River. Several other BLM wilderness areas are expected to be designated this year.

Garrison Diversion Plans Sidetracked

Almost 20 years ago the Bureau of Reclamation proposed an irrigation project for the state of North Dakota. Called the Garrison Diversion Project, it involved construction of a network of some 3,000 miles of canals, ditches, and reservoirs that would divert water into the eastern portions of the state. The estimated cost of the project was $207 million.

In the ensuing years Garrison became increasingly controversial as the environmental and political impacts became clear, work progressed slowly, and projected costs soared. Construction of Garrison would require the flooding or draining of hundreds of thousands of acres of prairie wetlands and native prairie rangelands, including a dozen national wildlife refuges. Because of its diversion of water from the Missouri River Basin into the Hudson Bay Watershed, the project would violate the Boundary Waters Treaty with Canada. By 1983, Garrison was 15-percent completed, and its estimated total cost had increased to $1.2 billion.

For the past three years the House of Representatives has withheld funding for Garrison, but the Senate has restored the money in final spending bills. On June 6, however, the issue was temporarily resolved by an agreement among environmental organizations and North Dakota Senators Mark Andrews (R) and Quentin Burdick (D). The senators agreed to offer an amendment to the Energy & Water Development Appropriations Bill, H.R. 5653, to freeze FY1985 funding for the project and to set up a 12-member commission to study its environmental impacts. The commission, to be appointed by the Interior Secretary, will examine the water-resource needs of North Dakota to develop alternatives and modifications to the project. Under the new compromise the requested $53.6 million will still be appropriated, but it will not be spent until the commission reports its findings on December 31. Construction of the project will stop at the end of this fiscal year.

The commission will conduct at least three public hearings, two of them in North Dakota, providing environmentalists an opportunity to speak out on the project. "We are greatly encouraged by the compromise, which represents a good deal of flexibility on both sides," said Jim MacInnes, the Sierra Club's Dacotah Chapter Chair. "While not a final victory, it certainly offers a significant opportunity to reach a better solution."

Congress Reaps Sodbuster Legislation

Each year, every acre of cropland in America loses an average of 14 tons of topsoil. Over the last few years, awareness of the severity of soil erosion has moved from the agricultural heartland to the halls of Congress, where both the House and the Senate have now taken the first steps toward instituting a federal program to promote soil conservation.

Passed by the Senate last November, legislation that would discourage farmers from converting fragile, erodible land to row-crop production was approved by the House on May 8. Known as the "sodbuster" bill, the measure would cut off federal price supports, loans, disaster payments, and crop insurance for all crops planted on erosion-prone land. Representative Ed Jones (D-Tenn.) noted that the legislation does not prohibit sodbusting, or cultivating fragile lands. "It in no way dictates to farmers what they can or cannot do with their land," said Jones. "This bill simply denies subsidies to farmers who engage in this practice."

The Sierra Club has worked for passage of the sodbuster bill for several years. "The basis for all wealth in agriculture rests in the soil resources that the United States is blessed with in abundance," said Bob Warrick, who chairs the Club's Agricultural Soil & Water Conservation Campaign Steering Committee. "If those resources are allowed to be wasted, abused, and washed away, that wealth will be gone forever. A first step is to see that federal benefits do not go to those who mistreat the soil, and we are pleased that this has been recognized by Congress."

Environmentalists Sue Over Grazing Policy

Nearly 170 million acres of public lands throughout the United States are administered by the Bureau of Land Management (BLM) and made available for private live-

stock grazing. Much of this land has long been subjected to excessive and improper grazing practices, which have resulted in the destruction of wildlife habitat, severe soil erosion, declining water quality, and deteriorated range conditions.

On May 9 the Sierra Club joined in a lawsuit against the BLM in an effort to overturn new regulations that allow the agency to transfer control of these rangelands to private ranchers through long-term "cooperative management agreements." The suit charges that the new policy violates the federal government's obligation to regulate private livestock grazing on the public lands, that it will insulate livestock owners from BLM oversight, and that it will hamper the public's legal right to participate in range management decisions.

The lawsuit was filed by the Natural Resources Defense Council; in addition to the Sierra Club, the coplaintiffs include The Wilderness Society, Defenders of Wildlife, and the Animal Defense Council.

Clean Air Runs Afoul in House; Acid Rain Protest Grows

Visions of a reauthorized Clean Air Act this year were smogged in on May 2 when the House Energy Subcommittee on Health & Environment voted 10-9 to strike all acid rain provisions from the draft legislation. Subcommittee Chair Henry Waxman (D-Calif.), an author of many of the provisions, said that chances for passage of a new bill in this Congress are "remote."

The House defeat gives added impetus to the acid rain postcard campaign organized by the Sierra Club, Friends of the Earth, the National Audubon Society, the National Wildlife Federation, and the National Clean Air Coalition. Thousands of the postcards, which appeared in the May/June *Sierra* and which are also in this issue, have already been collected and will be used to demonstrate to Congress, the President, and the EPA the extent of public support for control of acid rain. The groups have pledged to continue their campaign until Congress passes and the President signs adequate acid-rain legislation.

"The acid rain postcard campaign is the key to our strategy of establishing that acid rain is a national problem," said Sierra Club President Michele Perrault. "The American people know it, but the politicians won't believe it. Our postcards will prove it, just as our petition drive laid the groundwork for James Watt's departure." □

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POLITICS

Bob Jones, Jr./Wildlife Camera, Inc.

Fishing and pleasure boats still dock on the shores of the Chesapeake Bay, but the resources of what was once the nation's most productive body of water are disappearing because of rising pollution levels. Thirty years ago, the oyster catch (inset) was three times what it is today.

CLEANING UP THE CHESAPEAKE
A Cooperative Effort Takes Shape

CYNTHIA ADAMS

THE CHESAPEAKE is this country's largest and most productive estuary. From Havre de Grace on the Susquehanna Flats to the choppy waters at its mouth, between Cape Charles and Cape Henry, the bay is home to more than 2,700 species of plants and animals. Its 64,000-square-mile drainage extends into parts of six states. Its more than 50 tributaries transport life-giving nutrients and minerals to the main stem, which is 200 miles long and varies in width from four to almost 30 miles. Today the Chesapeake basin is home to more than 12.7 million people, and that population is expected to double by the year 2020.

Thousands of watermen maneuver their boats into the bay and its tributaries daily to net what traditionally has been a bountiful catch of oysters, crabs, clams, and finfish. Over the past 50 years the average oyster catch has been 27 million pounds, more than a quarter of the total domestic harvest. The Chesapeake is the world's largest single producer of blue crabs, with annual harvests averaging 55 million pounds. The finfish industry, which relies mainly on striped bass (known as rockfish throughout the region) and menhaden, enjoys annual revenues in the $100-million range.

These watermen and other users of the bay started noticing some changes in the Chesapeake about two decades ago. Such phenomena as the disappearance of underwater grasses (known as submerged aquatic vegetation, or SAV), mysterious fish kills, and murkiness in the water became of concern to scientists and boaters alike. In 1976, Sen. Charles Mathias (R-Md.) prompted Congress to appropriate money for an Environmental Protection Agency study of the Chesapeake.

Although many of the bay's ecological problems were apparent from the beginning of the seven-year, $27-million Chesapeake Bay Program, research efforts focused spe-

cifically on three areas: the decline in SAV, the increase in levels of toxic chemicals, and excessive nutrient enrichment. Existing data were gathered and analyzed, and 40 new research projects were undertaken. The resulting data base may be the largest of its kind in the world dedicated to one body of water.

An early finding relating to all three areas of study was the discovery that contaminants entering the Chesapeake, whether nutrients or toxic chemicals, are not flushed out to the Atlantic (as once was thought) but remain in the estuary, joining the food chain or accumulating in the bottom sediments.

The problems of nutrient enrichment and the decline in SAV were found to be related. Excess nutrients entering the bay cause an increase in phytoplankton, especially blue-green algae. This has at least two detrimental effects: By their sheer numbers these algae block the light SAV needs to survive, while at the same time they rob the water of oxygen essential to aquatic life. Submerged aquatic vegetation is important because it provides a habitat for a multitude of organisms, including molting blue crabs and spawning fish. In addition it stabilizes bottom sediments and provides a food source for many ducks and Canada geese. The depletion of oxygen has been most pronounced in the Chesapeake's deeper waters. During summer months a portion of the bay's channel becomes completely devoid of oxygen. This anoxic area has expanded 15-fold in the past 30 years, and the condition exists for an increasingly longer period of time each summer.

For bottom-dwelling (benthic) organisms such as oysters, oxygen depletion can be fatal. The EPA study could not definitively link the estuary's low levels of oxygen to the declining oyster harvests of recent years, but enough circumstantial evidence exists to suggest the relationship.

Excess nutrients are entering the Chesapeake estuary from two types of sources: point sources, such as sewage-treatment plants, and nonpoint sources, such as runoff from agricultural, urban, and forest lands. Nutrients from point sources account for 61 percent of the phosphorous and 33 percent of the nitrogen entering the bay, whereas nonpoint sources account for 39 percent of the phosphorous and 67 percent of the nitrogen.

The Chesapeake Bay Program also identified a serious toxic-chemical and metal-contamination problem in the industrialized areas of the bay. The sediments in the harbors of the two bay seaports, Baltimore and Hampton Roads, showed high concentrations of diverse toxic organic chemicals such as PCBs, Kepone, and DDT. Metals (including cadmium, chromium, lead, and zinc) appeared to be deposited in the slow-moving estuarine waters by the bay's tributary river systems.

The overall picture of the bay's health is that of an ecosystem in decline. Species sensitive to the intrusion of *homo sapiens* are disappearing and being replaced by other, often less desirable, species. Just as SAV is being replaced by blue-green algae, it appears that freshwater spawning fish (such as striped bass and shad) are being replaced by ocean spawning fish (such as bluefish and menhaden) that enter the bay to feed.

The final phase of the Chesapeake Bay Program involved initiation of a concerted management effort to restore the Chesapeake to its historical productivity. The EPA study was unique in its creation of a partnership among the governing agencies involved in the issue. The efforts of government agencies, bay users, scientists, representatives from industry and agriculture, politicians, and environmentalists came together in a December 1983 conference entitled "Choices for the Chesapeake: An Action Agenda." During the three-day conference, 700 participants surveyed the multitude of problems afflicting the suffering estuary, and composed a list of specific recommendations to guide governing bodies in structuring their cleanup efforts. The conference culminated as the governors of Maryland, Virginia, and Pennsylvania, EPA Administrator Ruckelshaus, the mayor of Washington, D.C., and other officials announced the first steps each government would take to help the bay recover. Each governing body was to have in place by July 1, 1984, a program aimed at reversing the decline in the Chesapeake ecosystem. At this writing, the various governments are working out the details of their programs and accompanying legislation.

Although the Chesapeake watershed includes portions of six states, only three are considered to be significant contributors to the bay's problems. Maryland and Virginia, which border the bay, are both polluters and beneficiaries of its resources. Pennsylvania does not border the bay, but has a serious impact on it because of the heavy inflow of the Susquehanna River.

The Reagan administration's approach to the Chesapeake issue mimics its environmental policies in other areas. Under this administration there has been a move to shift responsibility for many environmental programs from the federal to the state level, with cost-sharing funds available to assist states in administering the various programs. Funding for existing programs has not kept pace with the burden of implementing them, however.

In his February 1984 budget address, President Reagan included a $10-million appro-

priation for Chesapeake Bay cleanup during the coming fiscal year. This allotment has been criticized by many, including Larry Williams, a Sierra Club Washington, D.C., representative, who describes the measure as a step in the right direction but "clearly inadequate to take on so large a job as the 64,000-square-mile watershed of the bay."

Recognizing the seriousness of the bay's problems, Rep. Roy Dyson (D-Md.) has introduced legislation that goes beyond President Reagan's one-time appropriation. Dyson's bill (H.R. 2817) would authorize $10 million a year for each of the next four years, to be divided among Maryland, Virginia, and Pennsylvania; in addition, it would give the EPA $3 million a year over the same period to fund ongoing monitoring efforts.

The Clean Water Act, which will provide the statutory base for a federal Chesapeake Bay program, is up for reauthorization in Congress this year. The Senate version of the act (S. 431) is sponsored by John Chafee (R-R.I.). The Sierra Club, along with other environmental organizations, endorses this bill—which extends and expands the act's protection—even though it has weaknesses in the areas of nonpoint-source pollution and wetlands protection (Section 404), both of which are highly controversial issues.

Nonpoint-source pollution, which is responsible for half the nation's water pollution, was found to be an important factor contributing to the Chesapeake's decline. Various state erosion-control programs exist (under the aegis of the Agriculture Department's Soil Conservation Service), but currently there is no comprehensive national program that strives to control nonpoint-source pollution. Such a program would need to address nutrient runoff from agriculture—a particularly sensitive issue from the perspective of the agricultural community, which is notably resistant to conservation proposals entailing nonvoluntary compliance (i.e., regulations).

Section 404 of the Clean Water Act of 1972 currently regulates wetlands by forcing the Army Corps of Engineers to take into consideration the environmental impacts of dredge-and-fill activities affecting these areas. (See "Strengthening Wetlands Protection," *Sierra*, September/October 1983.) Wetlands protection is of critical importance to the Chesapeake because the 425,000 wetland acres surrounding the bay are crucial to its productivity.

Of the initiatives proposed by the three states most affected by the Chesapeake's malaise, Maryland's are considered the strongest. Like Virginia, Maryland is a major beneficiary of the bay's bounty, but its portion of the bay has experienced more degradation than Virginia's.

Gov. Harry Hughes's 1985 budget calls for Maryland to spend $13.8 million in operating funds and $39 million in bond monies on the Chesapeake. The centerpiece of Gov. Hughes's 10-item legislative package was a bill establishing a critical-areas commission, which is charged with setting development criteria for a 1,000-foot zone around the perimeter of the bay. The legislation recognizes that as the Chesapeake is a major state resource, the state should play a significant role in land-use planning around the bay.

At December's EPA conference, Virginia Gov. Charles Robb announced a two-year initial program backed by $6 million in new state funding. In 1984 the state Senate passed several additions that raised the total cost to $10.4 million. Chesapeake Bay-related legislation included two bills on fisheries management, one setting forth a strong fisheries-management policy and the other giving Virginia's Marine Resource Commission more freedom in adopting regulations.

Point-source pollution is addressed in a similar manner in both Maryland and Virginia. Each state will provide loans and grants to finance water and sewer projects. Toxic chemical discharge is addressed in both states through pretreatment and monitoring programs. Nonpoint-source pollution is addressed in both programs through stormwater management and erosion control—but in the area of agriculture both states opted for a voluntary compliance program.

Pennsylvania exerts its influence on the bay through the pollution carried by the Susquehanna River, which flows through the center of the state and contributes 50 percent of the fresh water entering the Chesapeake. Although pollution from the Susquehanna includes toxic chemicals and metals as well as nutrients from point sources, the overwhelming blow this river deals to the bay is from nonpoint nutrient sources.

Because of the rural nature of this basin, the EPA study showed, nonpoint-source pollution from agricultural land contributes 60 percent of the phosphorous and 85 percent of the nitrogen flowing into Chesapeake Bay from the Susquehanna in an average rainfall year. In consequence of this finding, Pennsylvania's initiative is aimed solely at reducing nonpoint-source nutrient pollution from agriculture.

The entire program depends on the voluntary cooperation of farmers. While some spokespeople from the agricultural community have reported a willingness among farmers to cooperate in the program, others have voiced some skepticism. Larry Schweiger of the National Wildlife Federation, in an article published in the *Philadelphia Inquirer*, said, "Unfortunately, the

proposed abatement actions . . . no matter how well-intended, will do little to solve Pennsylvania's portion of the Bay's pollution problems because the proposal relies on education and voluntary compliance by farmers—the same strategy that led to the problems in the first place."

In general, interest in the Chesapeake and the impetus to launch an effort at reducing the bay's decline both appear strong. Perhaps the most useful by-product of the EPA study has been the level of cooperation among the states. In analyzing the results of the Chesapeake Bay Program, William Baker, executive director of the Chesapeake Bay Foundation (a conservation organization devoted solely to the bay effort), wrote: "Understanding how these institutions interrelate, many with conflicting views on the bay's resource management, is a prerequisite for managing the bay."

While many people feel optimistic about the restoration effort, population in the Chesapeake Bay watershed is growing so rapidly that the big question will become whether the new programs—extensive as they may seem—will be able to hold the line on pollution in the face of ballooning development in the region.

Biologist Cynthia Adams is a member of the Sierra Club's Atlantic Region Subcommittee on Chesapeake Bay. She has spent two years working with the Chesapeake Bay Foundation.

BOUNDARY WATERS More Obstacles for a Troubled Law

KEVIN PROESCHOLDT

IT IS THE NORTH COUNTRY, a land of spruce and granite, filled with the echoing laugh and cry of the loon. Located in northeastern Minnesota's Superior National Forest, the Boundary Waters Canoe Area is a watery world, with lake connected to lake by passage and portage, by streams, marshes and waterfalls. Often, when the wind dies, only the click of dragonflies hunting mosquitoes breaks the silence.

The area's serenity has not been easily obtained, however, nor is it secure. The million-acre Boundary Waters Canoe Area (BWCA) Wilderness has been fought over since the turn of the century, making it one of the most embattled wild places on the continent. In 1984, conservationists concerned with the area mark two significant celebrations: the 75th anniversary of the establishment of Superior National Forest, and the fifth anniversary of the bitterly contested BWCA Wilderness Act.

Efforts to protect the Boundary Waters began in 1902, when the U.S. General Land Office was persuaded to set aside about 500,000 acres as a forest reserve. Seven years later, President Theodore Roosevelt established Superior National Forest; that same year the province of Ontario set aside the adjoining Quetico Forest Reserve (renamed Quetico Provincial Park in 1913).

But many battles lay ahead for this special land of lakes and forests. In the early 1920s conservationists defeated most of an extensive road-building plan, a victory that re-

Kahshahpiwi Lake lies within Quetico Provincial Park, the Boundary Waters' Canadian cousin. The American canoe country extends along 100 miles of Canada's border, and the two countries' management policies are closely linked. Both nations will be celebrating diamond jubilees this year.

sulted in the Forest Service's 1926 administrative designation of the Boundary Waters as a wilderness—the second such area in the nation. Later that decade conservationists successfully opposed a plan to build dams for hydroelectric power throughout the canoe country. In 1930, Congress enacted legislation to prohibit alteration of water levels and to prohibit logging within 400 feet of navigable waters.

In the 1940s, development of remote resorts serviced by floatplanes within the interior of the area again threatened the wild character of the Quetico-Superior. In 1948, Congress appropriated funds to purchase these inholdings, and the next year President Truman created an unprecedented airspace reservation over the roadless area in the Superior, prohibiting low-altitude flights and the landing of aircraft.

In the late 1950s and early 1960s, as the nation debated the Wilderness Act, the BWCA again saw controversy, primarily over logging practices. When the Wilderness Act finally passed in 1964, it included the Boundary Waters as a unit of the National Wilderness Preservation System.

But the Wilderness Act did not resolve the dispute over the U.S. side of the Quetico-Superior wilderness; rather it perpetuated existing conflicts and fostered new ones. Special provisions in the act singled

out the BWCA, to prohibit "unnecessary restrictions on other uses, including that of timber" and to allow "the continuance within the area of any already established use of motorboats." Mining and logging continued. The BWCA existed as a wilderness in name but not in practice.

Motorized travel in the BWCA became a hotly contested issue as visitor use increased in the late 1960s and early 1970s. Snowmobiles had been allowed in the BWCA since 1964 (as "winterized motorboats") and were permitted to follow the same routes open to motorboats. The 1974 BWCA Management Plan called for extending snowmobile use for five more years, despite President Nixon's 1972 executive order banning off-road vehicles from wilderness areas. Snowmobiles were eventually prohibited in the fall of 1976.

By the mid-1970s the BWCA found itself the focal point of contention in a heated and politically charged atmosphere. An attempt at resolution through an amendment to the Eastern Wilderness Act failed in late 1974. The retirement of veteran Rep. John Blatnik (D-Minn.) in early 1975 triggered the next confrontation on the path to preservation of the BWCA.

Long-time Blatnik aide Jim Oberstar won the election for Blatnik's seat in November 1974, and took office in 1975. The following October, Oberstar introduced legislation that he hoped would end the controversies surrounding the BWCA. His bill, however, shocked the environmental community: It would have split the BWCA and declassified approximately half a million wilderness acres to form a national recreation area where logging, motorboats, and snowmobiles would be allowed.

Environmentalists again banded together, and formed a coalition called Friends of the Boundary Waters Wilderness. The group turned to Rep. Don Fraser (D-Minn.), who introduced legislation to establish the BWCA as a fully protected wilderness. Together with the late Rep. Phillip Burton (D-Calif.) and Rep. Bruce Vento (D-Minn.), the Friends worked for several years on the BWCA Wilderness Act, which Congress passed in October 1978.

The act prohibited logging, restricted mining, allowed limited snowmobile use for five more years, and immediately restricted motorboat usage to 33 percent (from 60 percent) of the BWCA water surface area. Motorboats were to be restricted to 24 percent of the water surface area after phase-out periods, most of which ended in 1984. Because of the significant motorboat usage still allowed within the wilderness, the Sierra Club did not endorse the legislation.

It has been more than five years since the BWCA Wilderness Act was passed. Wilderness activists have struggled through a number of battles to defend the act and to guarantee that the Forest Service enforce the act's many provisions.

Dr. Miron Heinselman is a forest ecologist who chaired the Friends coalition during the campaign to secure passage of the act. "As I see it, the actual implementation of the act is in general effectively accomplishing the purposes Congress intended," says Heinselman. "It is indeed protecting the outstanding natural lake, stream, forest, and wildlife ecosystems of the area from commercial development, restoring natural conditions to recently logged areas, and effecting the transition from motorized recreational uses to nonmotorized uses."

Dr. Heinselman cites significant examples of the act's success: the termination of logging activities; the elimination this year of the three temporary snowmobile routes, as well as of motorboat use on nearly all the international boundary lakes adjoining motorless Quetico Provincial Park; and the acquisition by the Forest Service of 5,200 acres of private inholdings in addition to the area occupied by 18 resorts along the perimeter of the wilderness.

But not all of the act's provisions have been adequately implemented. Nelson French, executive director of the Sierra

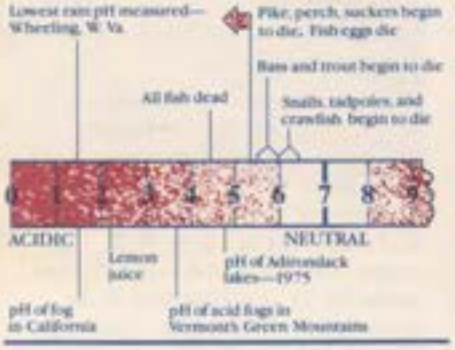
What do President Reagan, stubborn politicians of both parties in Congress, and the electrical utilities have in common?

They all want to block action to clean up acid rain.

What do the Sierra Club, the National Academy of Sciences, and millions of Americans have in common?

They all want immediate action to clean up Acid Rain.

The pH Scale and Acid Rain



If you are one of the millions for whom willingness to clean up acid rain is the litmus test of a commitment to the environment, please return one of these postcards to us **today**. And then give the others to friends who agree with you but who are not yet members.

This is the first step in mobilizing millions to stop acid rain in 1984. By signing up, you and your friends will let our nation's leaders know **you want action now**. The campaign will let you know other steps you can take to curb acid rain. The Sierra Club is being joined in this effort by the National Clean Air Coalition and dozens of other environmental and citizens groups. **Together we can stop acid rain.**

STOP ACID RAIN

Member's Card

☐ Yes, let our politicians know that I support the Campaign to Stop Acid Rain. A commitment to clean up acid rain is ***the litmus test*** for corporations and government, and I can't accept the "let's-just-study-the-problem" excuse.

☐ **In addition**, I want to work actively as a volunteer in the Campaign to Stop Acid Rain. Please put me in touch with the effort in my community.

☐ **Count on me as a Recruiter** in the Campaign to Stop Acid Rain. Send me a *Litmus Test Kit* for my local lakes and rainfall, and *five more postcards*.

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☐ Yes, let our politicians know that I support the Campaign to Stop Acid Rain. A commitment to clean up acid rain is ***the litmus test*** for corporations and government, and I can't accept the "let's-just-study-the-problem" excuse.

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What Have They Done to the Rain?

The problem of acid rain worsens every day. The rain in the eastern U.S. and pockets in the West averages 30 to 40 times more acidic than normal. This is due to sulfur dioxide and nitrogen oxide emissions, which have doubled over the last 30 years. The result:

- The National Academy of Sciences estimates that acid rain costs the eastern U.S. $5 billion a year in damages.
- Thousands of lakes and streams in North America are already dead.
- Acid rain leaches toxic metals into drinking water supplies.
- Sulfates from sulfur dioxide emissions threaten public health.
- Acid rain is causing $2 billion a year in damages to buildings and monuments.
- Forests are suffering from stunted growth and dieback.

The only way to stop acid rain is to stop it at its source – primarily sulfur dioxide emissions from coal-fired power plants. The National Academy of Sciences recommends that acid deposition be cut by 50%. This means reducing annual sulfur dioxide emissions by 12 million tons in the eastern U.S. Contrary to industry propaganda, we can do that while protecting jobs – and at reasonable cost.

Concerned politicians in Congress, including Vermont Republican Senator Robert Stafford and California Democratic Representative Henry Waxman, have been leading the effort to clean up acid rain with amendments to the Clean Air Act. However, their efforts have been blocked by the Reagan administration and a few members of Congress, working on behalf of powerful utilities and coal companies.

The Sierra Club and six northeastern states have sued the Environmental Protection Agency to try to prod it to action. Some states have initiated their own clean-up programs. Canada and several European countries have negotiated an international treaty on acid rain, and Canada has been trying to negotiate one with the U.S.

Only the united action of millions of Americans can overcome this alliance. That's what the National Campaign to Stop Acid Rain is all about. To join, please return your postcard . . . and recruit two friends to do so as well.

A solo paddler glides through the stillness of the Boundary Waters. Motorboats are permitted on 24 percent of the park's waterways.

Club North Star Chapter's Project Environment lobbying program, points out a number of areas in which the Forest Service has fallen short of its obligation. These include the failure to terminate three truck portages this year, retention of three culverts and a steel-arch road over the Isabella River, and a decision to maintain eight dams within the wilderness. "Even though the Club did not endorse the 1978 act, we fully intend to have its provisions properly implemented," he explains. "It may take litigation to force the Forest Service to comply with the law."

The BWCA has long been unpopular among a few local residents, who have repeatedly attempted to weaken the 1978 act. "There are still a few hotheads up here who have never accepted the decision from Congress," says Fern Arpi, a Sierra Club activist from northern Minnesota. "They continue to work to weaken wilderness protections for the Boundary Waters."

In July 1983, for example, a northern Minnesota-based Border Lakes Tourism Task Force proposed a package of amendments to the act that would have repealed nearly all its restrictions on the use of motorized vehicles. In October, several people in the BWCA border city of Ely, Minn., attempted to force Canadian officials to remove motor prohibitions on the international boundary lakes of Quetico Provincial Park, a move that, if successful, would have been used to apply diplomatic pressure on the U.S. to relax motor restrictions on the Minnesota side of the lakes.

In January, as the critical 1984 motor phase-out dates took effect, local residents attempted to pressure the Forest Service to allow *possession* of motors (but supposedly not their use) in paddle-only areas. The North Star Chapter and the Minnesota Audubon Council organized environmentalists to convince the Forest Service to deny this request.

Many activists fear that the Boundary Waters may become embroiled in Minnesota's election-year politics—as happened in 1978, when the BWCA was such a volatile issue that it played a role in Minnesota's three statewide races. This year another Senate race is under way, a campaign that features Rep. Jim Oberstar as one of the Democratic candidates. Although Oberstar has indicated to environmentalists that he will not try to amend the act, it is feared that election-year jockeying may politicize the BWCA once again.

The BWCA Wilderness is also threatened by mining: Copper-nickel sulfide ores lie in and near the canoe country. Although the 1978 law restricts mining activities, an outright ban or prohibition does not exist, and the specter of copper-nickel or precious-metal mining within the wilderness or on its periphery hangs over the canoe country, promising potentially disastrous effects on air and water quality. Chuck Dayton, an attorney for the Sierra Club who played a key role in convincing Congress to pass the BWCA Wilderness Act, fears that "the greatest threat to the BWCA in the long run is the continued existence of privately held mineral rights inside the area." The act contains provisions authorizing acquisition of mineral rights, he explains, "and the hope was that Congress would appropriate money for the purchase of those mineral rights, but there has been no move to do so."

Perhaps the ultimate threat to the BWCA Wilderness comes from acid rain. The canoe country tops the list of areas in Minnesota most sensitive to acid deposition, and it absorbs acid inputs at levels even greater than those that caused damage in central Scandinavia. Although Minnesota passed the Acid Deposition Control Act in 1982, the problem goes far beyond Minnesota's borders. State officials have estimated that between 70 and 80 percent of the acid rain falling on the BWCA Wilderness comes from outside Minnesota; the responsibility for its control, therefore, falls on Congress.

"Although no BWCA lakes have yet acidified, state officials have documented changes in lake chemistry there that show a decline in buffering capacity," says Carol Lee Baudler, a long-time Boundary Waters activist and the Sierra Club's Midwest Regional Vice-President. "We still have time to save the BWCA lakes from the fate of many lakes in the Adirondacks—but not unless Congress acts soon."

This year's celebrations will not mark an end to the conflict over the Boundary Waters. Unless the efforts begun so many years ago continue, the buzz of motors could easily replace the call of the loon as the wild song of the north.

Kevin Proescholdt is a legislative consultant to the Minnesota Audubon Council.

PESTICIDE RESIDUES
Swallowing the Government's Line

AL MEYERHOFF AND LAWRIE MOTT

So now there's poison in our food. For months the news has brought us scenes of supermarket shelves being cleared while voices tinged with concern intone such terms as "carcinogen," "mutagen," "parts per billion," and, over and over again, "EDB."

Finally, 10 years after the federal government first had evidence that the pesticide ethylene dibromide (EDB) is a significant cause of cancer, heritable genetic mutations, sterility, and other health problems, the Environmental Protection Agency banned its use. EDB is now out of the news—but not out of the food chain. It will remain in a wide variety of grain products, flour, cereals, and other food items for years to come at levels deemed "safe" by the federal government.

But a good many experts believe that there *is* no safe (or threshold) level of exposure to potent carcinogens and mutagens. Thus, the EPA's standards for maximum acceptable EDB levels in food (900 parts per billion for grain, 150 ppb for flour and cereal

products, and 30 ppb for finished foods) may continue to present an unacceptable (and unwarranted) threat to public health. This was the testimony seven highly respected cancer experts gave at recent hearings in support of Massachusetts' more stringent EDB standard—one part per billion across the board. Furthermore, before the issue became politicized, the original 1982 draft EPA decision document for EDB both recommended a "no detectable residue" level and required the following label for any flour with EDB residues: "WARNING: Flour containing EDB is unfit for consumption by human or animals."

Statutory authority regulating the use of pesticides in the United States is shared between two basic laws: the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Food, Drug and Cosmetic Act. Historically, FIFRA was principally a licensing statute that gave little attention to protection of the environment. The act was amended in 1972 to ensure that pesticides would not result in harm to the environment or to human health. Unfortunately, even as amended the law is tailored more to the needs of the pesticide industry than to those of the general public. It is riddled with loopholes that permit the continued registration and use of chemicals not fully tested for acute or chronic health effects.

The Food, Drug and Cosmetic Act is a more specific statute intended to ensure that the American food supply is "safe"—free from dangerous chemicals, drugs, or other potentially deleterious substances. The law contains a provision, for example, that prohibits the use of any food additive shown to cause cancer in laboratory animals. Unlike FIFRA, the Food, Drug and Cosmetic Act places a premium on protection of public health and the consumer while also recognizing the need for an adequate food supply.

The act also establishes procedures and standards for setting "tolerances" (the maximum levels of pesticide residues deemed safe scientifically) for human consumption. Tolerances are set by the EPA and enforced by the Food and Drug Administration (FDA). To enforce the tolerance regulations, the FDA conducts nationwide monitoring to ensure that foods do not contain pesticides in excess of acceptable levels.

Tolerances are set by reviewing toxicological test data to determine what constitutes safe levels of dietary exposure to particular chemicals. The EPA then compares these maximum permissible exposure levels with the estimated dietary exposure and establishes the tolerance levels.

In many ways the story of EDB is a primer on the ineffectiveness of the existing system, as known carcinogens and other hazardous chemicals continue to appear in the American food supply. An independent study of California-grown fresh fruits and vegetables released in March 1984 by the Natural Resources Defense Council (NRDC) found residues of 19 pesticides on 44 percent of the produce sampled. Nearly half the samples with detectable pesticides contained residues of more than one, and some contained as many as four; this is significant because, through synergism, one pesticide may interfere with the body's defense mechanisms in such a way as to magnify substantially the toxic effects of another. Seven of the pesticides found in the NRDC study were known or probable carcinogens, among them DDT and dieldrin, each of which has been banned for more than a decade.

Then there is the case of carbon tetrachloride, a grain fumigant widely used in the United States. Recently banned in Canada, carbon tet was "exempted" from the pesticide-residue limit (the "tolerance" requirements) of the federal Food, Drug and Cosmetic Act in the 1950s on the assumption that its residues would not occur in food. But

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DU PONT

in 1980, carbon tet was included in a special EPA review of pesticides suspected of posing danger to humans or the environment. (It was this review process that took several years to complete for EDB.) A 1983 draft EPA report found substantial residues of carbon tet in grain, flour, the crust of baked bread, milk, citrus and other fruits, and vegetables. In April of this year, the EPA's science advisory panel approved this draft and labeled carbon tet "a probable human carcinogen." Despite repeated requests for regulatory action (directed to EPA Administrator William Ruckelshaus by environmental, labor, and consumer organizations), no tolerance level for carbon tet has been set. Similar "exemptions" have been granted for at least 80 other active and hundreds of inert pesticide ingredients that may pose serious health risks.

WHILE THE PESTICIDE problem is exacerbated by the apparent powerlessness of the federal bureaucracy to act when a chemical is known to present serious health and environmental hazards, perhaps the greater threat is from pesticides about which we know next to nothing. In the vast majority of cases we now regulate out of ignorance, with extensive gaps in the premarket health-and-safety test data needed to establish "safe" tolerances.

According to a report issued in March 1984 by the National Academy of Sciences, only 10 percent of the pesticides now in use have sufficient health-and-safety data for a complete assessment, and only 36 percent have been studied in sufficient depth to yield even minimal toxicity data. An earlier (1982) House Agriculture Subcommittee staff report documented that 84 percent of the pesticides registered in the United States have not been adequately tested for carcinogenicity, 93 percent have not been sufficiently tested for mutagenicity (the capacity to damage chromosomes and create genetic mutations), and 70 percent have not been tested for their ability to cause birth defects in developing human fetuses.

Further, hundreds of tolerances have been established on the basis of pivotal studies since found to be invalid by the federal government. The data were supplied to the EPA by Industrial Biotest Laboratories (IBT), one of the nation's largest safety-testing labs and the scene of one of the greatest scientific scandals in memory. This past April, three high-level IBT officials were sentenced to federal-prison terms for submission of fraudulent laboratory data to the EPA. More than 90 percent of the tests conducted by IBT are now known to be invalid due to sloppy or fraudulent research.

Today, anyone eating an apple—the symbol of healthful eating—will be ingesting a small diet of pesticides. The level of pesticide residues permitted in that apple was set, in many cases, on the basis of invalid IBT studies. At least 10 IBT-tested pesticides have tolerances set for apples. The EPA has determined that a total of 43 tests applied to these 10 pesticides are invalid in pivotal health categories. Yet the tolerances remain in effect. The story is the same for grapes, eggs, strawberries, leeks, onions, pears, corn, oranges, peaches, lettuce, tomatoes, peanuts, cucumbers: Virtually everything we eat is tainted by IBT-tested pesticides. The promise of safety under the federal Food, Drug and Cosmetic Act has become as false as the IBT data itself.

Not only are there serious flaws in the pesticide data base that has been used for setting safe tolerances; erroneous assumptions have also been made about American eating habits. In setting acceptable residue limits the government assumed, for example, that a person consumes no more than 7½ ounces *per year* of the following fruits and vegetables: avocados, artichokes, brussels sprouts, canteloupes, eggplants, melons, mushrooms, radishes, tangerines, summer squash, and winter squash. Anyone who has eaten more than 7½ ounces of any of these foods this year may have absorbed more pesticides than the EPA considers safe. This formula—in use for decades—is now belatedly being considered for reform by the agency.

Finally, various press accounts of EDB have focused on the fact that the food and chemical industries have inordinate influence over decision-making by government officials. This too is nothing new. In the case of pentachlorophenol, another highly controversial chemical, 34 private meetings with industry representatives were held at the EPA to determine its fate. Similar closed meetings have been held during the past few years to reach regulatory decisions on a host of other controversial pesticides, including paraquat, ethylene oxide, and permethrin. While Anne Gorsuch Burford made this sort of industry influence notorious, the chemical companies' access to the EPA remains pervasive.

While pesticide manufacturers may often enjoy direct access to federal regulatory agencies, their deadly products do not always travel a direct route to the human body, nor are they limited to that destination. On the House floor in July 1982, Rep. Sidney Yates (D-Ill.) issued a call for the banning of toxaphene, a known carcinogen that affects the central nervous system and causes kidney and liver damage. Representative Yates supported his argument for the ban with evidence that toxaphene had been found in Lake Michigan trout and other fish species in excess of the highest levels permit-

ted by the FDA. An EPA report indicated that toxaphene, once introduced into Lake Michigan, was likely to remain there for more than 100 years. Furthermore, according to an EPA spokesperson, "the toxaphene residues in the Great Lakes almost certainly resulted from atmospheric transport from the southern states." The closest use of toxaphene was 1,000 miles away, on cotton crops in Mississippi.

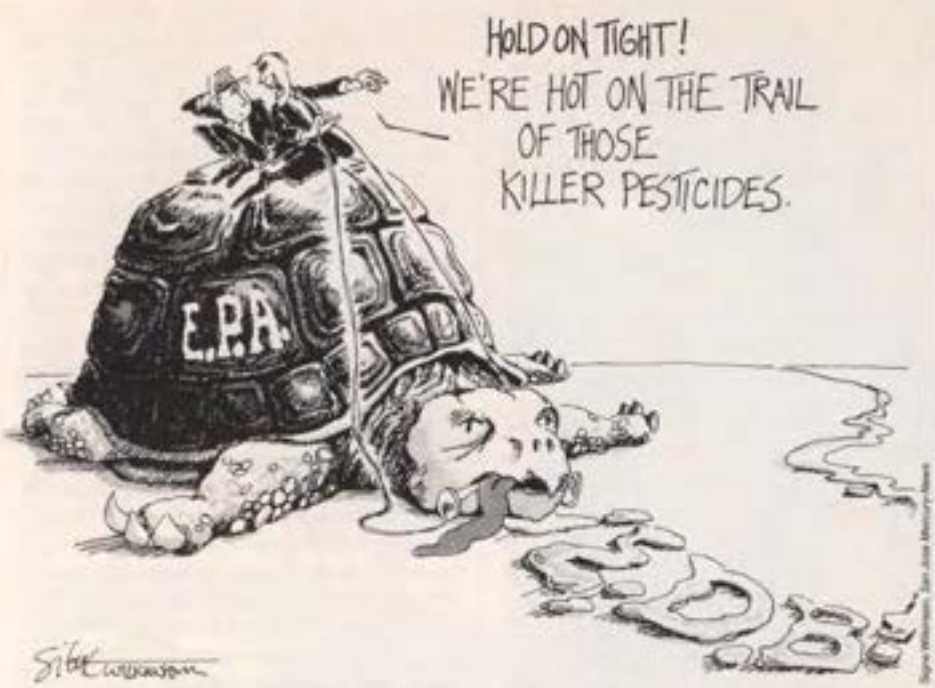
Over a period of three or four months in 1982, 90 percent of the milk supply in Hawaii was confiscated because of contamination by heptachlor, a pesticide linked to liver disorders and leukemia. Heptachlor had been sprayed on pineapple leaves that were then fed to dairy cows. More recently, several dangerous pesticides have been found in the tissues of penguins in Antarctica.

What will be next year's pesticide debacle? "Is there another bad actor out there?" Assistant EPA Administrator John Moore asked rhetorically in a recent newspaper interview. "I can say yes with a high degree of confidence." Apparently, without fundamental reform of the nation's pesticide laws, we are destined to repeat the EDB debacle in perpetuity.

The Federal Insecticide, Fungicide and Rodenticide Act and the Food, Drug and Cosmetic Act are now proposed for reauthorization by Congress. During the entire EDB incident, amendments to the former law remained stalled in the House and Senate Agriculture committees, traditional graveyards for pesticide reform; both committees failed even to hold a hearing on EDB. In late April of this year, Rep. Henry Waxman (D-Calif.) introduced a bill, H.R. 5495, that would comprehensively amend the Food, Drug and Cosmetic Act to protect the public more adequately from unsafe and untested pesticides.

H.R. 5495 would require that unless pesticides used on food are fully tested within three years, existing tolerances will be rescinded. It would cancel tolerances based upon fraudulent or invalid data if adequate replacement studies have not been conducted, and it would prevent future abuses in "exempting" chemicals from federal law. Finally, the Waxman bill would make industry test data available to the public and for scientific peer review. The bill is being strongly opposed by the chemical industry. Its future is in doubt unless a strong message is sent to Congress—now—that we simply will no longer tolerate an outdated and fundamentally flawed system to protect our food from toxic chemicals.

We can make our lives and our food safer. It is not true that everything causes cancer, or that we must continue to use massive amounts of hazardous chemicals for food production. A recent Harris Poll (con-



ducted prior to the EDB scare) determined that 77 percent of the American public consider pesticides in their food to be a serious hazard. Yet American agriculture continues to use more and more chemicals (2.5 billion pounds this year)—and it continues to lose the war against pests. During the past 30 years pesticide use has increased 1,100 percent, while the percentage of crops lost to insects has doubled. In the long term, we must work to reduce our dependence on these chemicals through integrated pest management and alternative forms of pest control, improved plant breeding, and other promising approaches. In the meantime, Rep. Waxman's bill offers hope that chemicals we do use can be used safely and wisely.

Al Meyerhoff is a senior staff attorney and Lawrie Mott is a project scientist with the Natural Resources Defense Council.

THE MX CONTROVERSY
Discouraging Words From the Plains

BETSY MARSTON

THE MX CONTINUES to be one of the most divisive defense issues on Capitol Hill. On May 31 the House voted to delay production funding for the next 15 missiles pending congressional approval next April. Two weeks later the Senate authorized production of 21 more missiles. Regardless of how this difference is resolved, 21 missiles approved last year are scheduled for deployment in existing Minuteman missile silos in Nebraska and Wyoming beginning in 1985.

But the system may not receive a warm welcome from its new neighbors. Opposition to the MX is deeply rooted in the West, where ranchers, ministers, and environmental and peace groups have taken on the slow, patient work of educating and organizing residents, some of whom live with Minuteman silos in their back 40 acres. Although activists were disappointed by the recent vote, regional opposition to the MX shows no signs of fading.

The MX suffered a rough winter on the plains, beginning on February 10 when Nebraska Gov. Bob Kerrey (D) and Wyoming Gov. Ed Herschler (D) wrote to President Reagan to ask for a one-year delay in deploying the MX in their states. That Kerrey, who has consistently opposed the MX, would ask for a moratorium was not as surprising as Herschler's participation in the request. In 1981, Herschler wrote to Secretary of Defense Caspar Weinberger, promising Wyoming's cooperation on MX deployment in the state. He has also said that the MX was "palatable" for Wyoming.

In their letter, Herschler and Kerrey stated that the MX, "because of its vulnerability . . . could turn out to be a sitting

duck in a sea of deficits." Use the year to renew arms negotiations with the Soviet Union, the governors urged, and save $15 billion if Soviet leaders respond positively. "Even if they do not respond, the $5 billion of postponed costs will be helpful toward balancing the budget," the governors' letter concluded.

Fifteen days after the President was notified about the letter, a Reagan spokesman turned the governors down.

Two days later, on February 27, 20 more governors joined Herschler and Kerrey in asking the President to delay MX deployment. Circulated by Colorado Gov. Richard Lamm (D) at a national governors conference, their letter read, "We Governors support the request for a one-year delay so that the Governors of Nebraska and Wyoming have more time to (1) assess the impact of the project on their two states; (2) develop an adequate mitigation plan to deal with the impact; and (3) secure sufficient federal assistance or other financial assistance to fund the different elements of the mitigation plan. This delay would also provide additional opportunity to assess the impact of MX deployment in adjoining states."

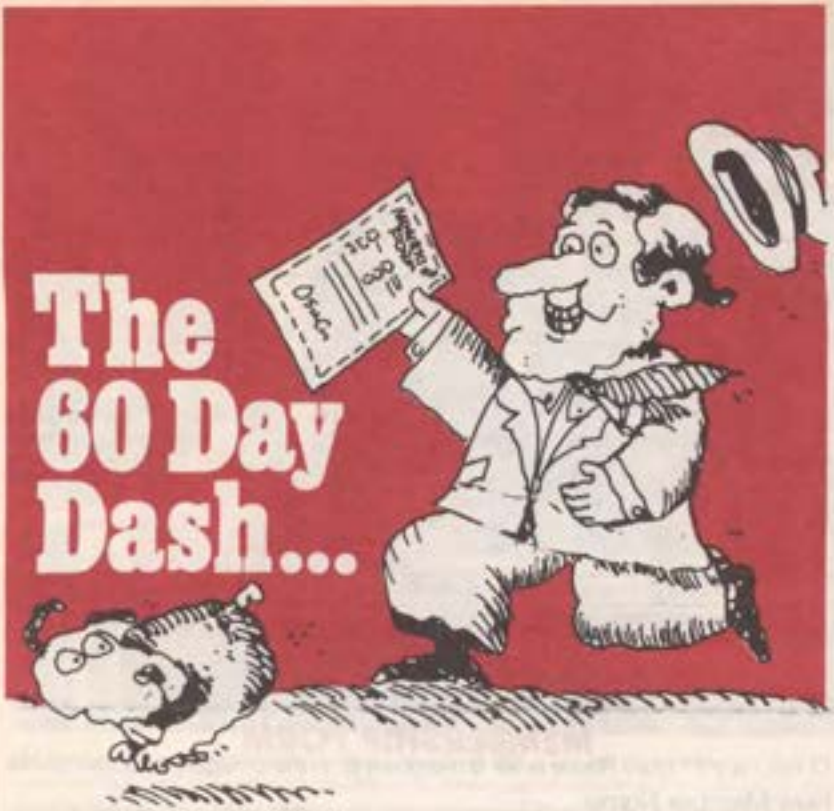
The governors' call for a delay picked up more support on March 9 when 27 members of Wyoming's House of Representatives signed a resolution asking for a year's grace period before the MX is deployed. Legislators are continuing to seek signatures from the 64-member body.

As spring came to the plains and the mountain valleys, the MX began to look even more vulnerable. In April, Colorado became the first state to challenge the MX by suing the President, the Secretary of the Air Force, and the Secretary of Defense. The state charged that the Air Force's final Environmental Impact Statement (EIS), issued on January 31, was inadequate because it ignored the impacts of MX deployment on Colorado.

The Air Force had refused to hold any public hearings in the state, even though five silos chosen to house the MX at Warren Air Force Base in Wyoming are five miles from Colorado's border, and all 100 missiles will be within 60 miles of the state. Parts of the missiles will be trucked through Colorado, and workers will almost certainly commute from its northern cities.

In its EIS the Air Force stated that "regional influences" had been taken into account. No meetings were needed in Colorado, however, because only missile deployment areas required concentrated study; only they would receive "measurable direct project effects."

But, the Air Force added, "While the report does not cover Colorado communities specifically, that is not to say that



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Supporting	☐ $ 50	☐ $ 54	*Student*	☐ $15	☐ $19
Contributing	☐ $100	☐ $104	*Spouse of Life*		
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U.S. Air Force

Technicians place nuclear warheads on the nose of an MX. Each missile carries up to 10 independently targeted warheads capable of destroying Soviet missiles in their silos. Opponents fear the MX's power and accuracy could cause the Soviet Union to launch its missiles first.

workers residing in the Region of Influence would not come from Colorado, especially since the main gate to the Air Force base is only slightly more than 10 miles north of the state line and accessible by a major interstate highway."

The same week that Colorado's attorney general filed the state's lawsuit, a "coalition of coalitions" took its case to federal district court in Lincoln, Neb. On April 18, Western Solidarity, which represents hundreds of groups and individuals in an eight-state area, filed suit against the Reagan administration.

Attorney Andrew Reid of Nebraska, who prepared the case, said that there is a great deal to challenge in the Air Force's 17-volume EIS. "It is a shoddy, narrow document that was done in a hurry," he said. With 39 coplaintiffs, the 80-page Western Solidarity suit details 19 "causes for action" to block the MX from Nebraska and Wyoming.

The Western Solidarity lawsuit charges the Air Force with numerous violations of the National Environmental Policy Act (NEPA). In the EIS, claims Western Solidarity, the Air Force ignored key requirements by excluding Colorado from its schedule of public meetings, by examining only one basing alternative for the missile, and by failing to examine the "worst cases" of accidental detonation or nuclear war itself. Just last year, Reid noted, an MX exploded during testing, killing four workers.

The Air Force did not fully address the danger of earthquake, Reid said, even though the first 10 missiles would be placed near an active fault zone. He also said that Indian burial sites may be disturbed by MX deployment and that historical and archaeological sites have not been identified.

Responding to numerous criticisms that it failed to address the impacts of "worst-case" accidents or nuclear war (the Sierra Club was a plaintiff in a similar lawsuit rejected by the Court of Appeals last year), the Air Force says only that the issues of "deployment and peacetime operation" were mandated by Congress. "The Peacekeeper system is being deployed to deter war," states the Air Force. ("Peacekeeper" is Reagan's new name for the MX.) "The possibility of nuclear war is remote and speculative, and the impact dependent on the military actions of a foreign power."

The Air Force counters the criticism about its narrow scope and rapid strides toward turning the $5-million draft EIS into a decision document by citing a mandate from Congress. That mandate began taking shape in 1983, says the Air Force, when President Reagan established a strategic-forces commission, headed by Brent Scowcroft. The commission concluded that the nation's defense required upgraded land-based weapons as an intermediate measure, and recommended deployment of 100 Peacekeeper missiles.

The President then decided to deploy 100

Peacekeepers in specific existing silos, and made this recommendation in a report to Congress. The Air Force claims that an amendment to the 1983 Defense Appropriations Act exempted the President's report and proposals from the requirements of NEPA. The 45-day comment period could not have been extended, adds the Air Force, because Congress also imposed deadlines: an EIS by January 1984, and 10 Peacekeeper missiles operational by December 31, 1984.

The Western Solidarity suit goes beyond the violations of NEPA to charge that MX deployment violates international law because it is an offensive, first-strike weapon. The MX's pinpoint accuracy (to within .05 mile) enables it to destroy Soviet missiles in their silos. "Because the MX is vulnerable in its unhardened silos to a first strike by Soviet missiles," said Reid, "it is useful only if we fire first."

While not a party to the Western Solidarity lawsuit, the Sierra Club's Wyoming Chapter has been working against the MX since it was first proposed for deployment in the region. The chapter's MX Committee is focusing on the detrimental environmental effects of the system and is concerned by the lack of research that the Air Force has displayed thus far. Mike Massie, chair of both the chapter and the MX Committee, points out that the Air Force has been consistently vague about the numbers of people who might be brought into the Cheyenne area—and about the impacts this influx will have on water, rangeland, and fish and wildlife of the region. The chapter shares the worries of other opponents that the system—and its impacts—may be far broader in scope than is now projected.

"The Wyoming Chapter always has opposed and always will oppose the deployment of the MX," said Massie. "They may be just missile-stuffing now—that is, replacing one missile with another—but everyone, even Congress, knows that this is just an interim step." Citing the increasing evidence that the MX in Minuteman silos does not meet the Defense Department's "invulnerability" criteria, Massie predicted that the Pentagon will be back with another basing mode or with an antiballistic missile system. "It doesn't matter if they deploy 20 or 100 next year," he said. "Once it's in, the Air Force will want more."

The MX debate in the plains will continue during—and beyond—the MX debate in Congress. One thing that is clear is that the missile's opponents will not be placated by a reduction in the number of missiles; the unanimous sentiment in the anti-MX community is that only a complete cut is acceptable. "We are energized to continue," said Sister Francis Russell, coordinator of the Tri-State MX Coalition, based in Cheyenne. "We don't want even one of them." □

Betsy Marston is editor of the biweekly High Country News, *based in Paonia, Colo.*

SIGHTINGS

Iowa Gov. Terry Branstad presents pens to Sierrans Mike Cruz (left), Marge Heartney, and Fabiane Cruz at the signing of the Iowa Superfund legislation. Thanks in part to the chapter's lobbying efforts, the bill passed both houses of the state legislature by margins of more than 5 to 1.

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A Tribute to
ANSEL ADAMS

DAVID BROWER

LATE LAST YEAR, Ansel Adams generously agreed to be Honorary Chairman of the Second Biennial Conference on the Fate of the Earth, to be held in Washington, D.C., this fall. His doctor did not want him to travel that far, but Ansel would do what he could, and had already started working on a Manifesto for the Earth. Through notes and telephone calls we began putting the pieces together. And then, on April 22, I learned that Ansel had died. We had been in touch in early April, discussing what else might be in the Manifesto. It was a phone call that inevitably began with one of Ansel's funny stories. That was the last time. When was the first?

I met Ansel in the mountains, when I was 20 and he was 31. I had known about him through the *Sierra Club Bulletin*, in which editor Francis Farquhar had arranged to highlight Ansel's work in exquisite gravure frontispieces. The first, in 1928, was Black Kaweah. In 1929 it was Mount Robson. Next, Banner Peak and Thousand Island Lake. In 1931 and 1932, Half Dome and Mountain Hemlock, near Yosemite's Volunteer Peak. But I did not know what he himself looked like. A friend and I were headed toward the Sierra Club High Trip's late-June camp when a bearded type, camera and tripod over his shoulder, came up through the timberline forest. "You must be Ansel Adams," I said, and he agreed. Neither of us knew who I was, and the conversation was brief. He did complain about the early-morning cumulus clouds, which were still too fuzzy to photograph.

Three months later I joined the Sierra Club, and Ansel began to work on me. Through an agreement with the Yosemite Park and Curry Co., Ansel provided photographs for use by the advertising department. As the company's publicity manager, I selected the prints I liked best to send out with press releases; there were albums of wonderful Adams prints to pore over and select from. This brought me into frequent contact with Ansel, sometimes at his studio on 24th Avenue in San Francisco, but more often at Best Studio in Yosemite Valley. We walked the base of Half Dome, where I showed him how to scramble directly down to Mirror Lake. We took pack trips into the Yosemite High Sierra. With Edward Weston, Charis Wilson, and Virginia Adams, we spent happy, rainy hours in our tent telling stories and destroying bourbon. Ansel photographed Morgan Harris, clouds, and me on the only Minaret we ever climbed, a small one at that, which opens Ansel's great book, *Sierra Nevada: The John Muir Trail*. The book became a major stepping

Bridalveil Fall,
Yosemite National Park, c. 1935

The photos of Ansel Adams on this and the following spread are from the Cedric Wright Collection, which is housed in the Sierra Club's William E. Colby Library.

stone in the creation of Kings Canyon National Park—a tribute to Ansel by Secretary of the Interior Harold Ickes.

The memorable Yosemite days included parties at Best Studio, before it was remodeled into the Ansel Adams Gallery. The public part was split-level. In the lower level were things to buy, splendidly different from what you'd find in the tourist shops in the Valley; Ansel and Virginia saw to that. In the upper level were things to admire—a gallery of Adams prints on the wall, a Steinway concert grand, and plenty of room for people. When Ansel played the Steinway you almost regretted his decision to give up the concert stage for the lens. Sometimes he would change pace by playing a cadenza with an orange, or, for the bump-bump bump-bumps of the *Blue Danube*, he would half rise, turn, and play the chords fulsomely with his rear.

The room had further distinctions. As I remember, the VIPs who dropped in at Yosemite sometimes visited the park superintendent, sometimes visited the company president, but always found their way to that room. It wasn't just for the music or the gallery or the superb bar that Ansel ran for his guests, but for the pleasure of being witness to what was going on in the forefront of photography. Whatever the latest route to excellence in photographic technology, Ansel either led the way or pushed others up to it. The other distinction was the camaraderie, epitomized in the declaration above the fireplace on 24th Avenue: O JOY DIVINE OF FRIENDS!

I spent many an hour on many a day in Ansel's darkroom, watching him, telling him my troubles, and listening to his advice. I learned some essentials: What national parks were about. What made them an American first. What stone, space, and sky did for us, and the simple growing things. He led me to see what was behind and within his photographs, and what could happen when words and images worked their magic together.

Knowing from his own sources that I was not increasing in stature or favor with the Curry Company, in 1937 Ansel proposed a new career for me—that of Executive Secretary of the Sierra Club. (The idea didn't fly, for a number of reasons.) Between then and the afternoon in 1967, at a Sierra Club Board meeting at Clair Tappaan Lodge, when Ansel

Rolling Hills, Sonoma County, California, 1954

was the first to suggest that I no longer be Executive Director of the Club, there were many shared times, both good and painful. The next decades: the Kings Canyon campaign, the Grand Canyon, Yosemite Valley and the Tioga Road, the North Cascades, the effort to show that the national-park idea and the wilderness idea were one and the same. The happy events on 24th Avenue, Ansel's bout with infectious mononucleosis (when it was strange and frightening, and a bedridden Ansel was thinking about what he'd do with the rest of his life if he survived), his move from San Francisco to Carmel, his occasional beating of the great Marco Polo drum above his new and much greater fireplace. A reunion of three couples—Ansel and Virginia, Edgar and Peggy Wayburn, my wife Anne and me—where the scars of wounds inflicted over the years vanished before the evening ended.

And a most special happening: *This Is the American Earth*.

How did that project begin? Both collaborators, Nancy Newhall and Ansel, are gone now, so I cannot be sure. For a while I thought it began in the Sierra Club's LeConte Lodge in Yosemite. The National Park Service didn't think that the Club was doing anything important there, and Ansel and Nancy came up with the idea of putting together an exhibit that would place the national-park idea in its global context. The exhibit was called "This Is the American Earth," and it filled a dozen four-by-eight panels. Half the photographs were Ansel's; the others were drawn from all over. But would the exhibit fit? Anyone who has visited LeConte Lodge knows there is no way to get so many panels in so small a space, but they were installed nevertheless. To see the exhibit, people walked in ever-diminishing circles. Rumor had it that they never got out; certainly they never got out unimpressed. The big photographs had their own dynamic; other photographs were sized as in a normal show. Then there were "Ansel's little jewels," as Nancy called them, mostly in Polaroid. A few natural objects were added. These were the visual and emotional stimulators. But Nancy, working with Ansel, had added the words where they were needed to ensure that voice and image reinforced each other, creating a new dimension that neither could evoke by itself. It was impossible to describe, in words alone, what the counterpoint was like. It was a symphony. It moved individual viewers.

Early Morning, Merced River, Yosemite Valley, 1950

It moved the California Academy of Sciences and Stanford University into displaying it. It even moved the U.S. Information Agency, which saw that the exhibit reached audiences around the world.

So it had to be a book—but how do you put an exhibit in a book? You come up with a format that can accommodate images large enough to require that your eyes roam them, tempt you to dive in and swim. Well, books had better not be that big . . . coffee tables would have to be reinforced. So we settled on a size (10¼ x 13½ inches) and a name (Exhibit Format). After struggles meriting a small book in themselves, we had it. The exhibit was launched in 1955, the book in 1960. I designed a promotional brochure folded into an envelope that modestly claimed "the most important announcement the Sierra Club has ever made." I believed it, and so, in due course, did a lot of people.

But did all this really begin in 1955? No, that's not early enough. Taking a last look before writing this, I opened to Ansel's foreword to a book entitled *My Camera in the National Parks*. And the whole idea was there. *This Is the American Earth* simply expanded the images. Ansel had already, while still in his thirties, put the wilderness idea in its global context. That book is hard to find, but it's worth trying. It's worth seeing what the human mind can conceive and express when it wants to.

His ideas, and the way he illustrated them, need to get around some more. Somehow they must be built into the Manifesto for the Earth, or into the Ansel Adams Alliance for the Retirement of Ronald Reagan First, Foremost, and Fast!!! (AAARRRFFF!!!) (The exclamation points are essential. As any photographer knows, words require reinforcement.)

At our house we have Ansel's *Tenaya Lake* and *Aspens, New Mexico* on the wall. The day Ansel died, my son Kenneth dropped by the house and paused by our Ansel wall. He saw the beauty that Ansel brought into our lives from out where he found the light eloquent and the moment something that should endure. What Ansel saw still exists for the most part, and will remain if people make a personal commitment to keep wilderness alive. Ken said it simply: "Ansel's gone. But his eyes are still here." □

CRITICAL MASSES

World Population 1984

ANNE EHRLICH

Ten years ago, slightly fewer than four billion people inhabited the Earth. The community of nations recognized the problem of unconstrained human population growth by holding an international conference on the subject in Bucharest, Rumania, under the auspices of the United Nations. This summer a second conference is being held in Mexico City. What has changed since 1974?

First, global population has expanded by 800 million people—an increase of 20 percent over the 1974 figure. In 1984 more people will be born than in any other year in history. Barring an unpredictable catastrophe, the planet's human population almost certainly will have surpassed 6 billion by the turn of the century. Clearly, the population explosion is far from over.

The good news is that the *rate* of population growth—expressed as a percentage, not in terms of the absolute numbers added per year—has begun to slacken because of declining birthrates in many nations. Nevertheless, because of the "momentum of population growth," the world's population is destined to continue growing for a century or so. The extremely large numbers of young people produced by the high birthrates of the last few decades are parents of the next generation; even if their fertility is relatively low, their children and grandchildren will more than replace today's much smaller older generations. Most recent projections indicate that world population will reach 10 billion or more before growth can be halted.

In 1974 there was widespread opposition to the idea that population growth should be controlled. "Development is the best contraceptive" was a favorite slogan of anti-family-planning activists at the Bucharest Population Conference. This notion was based on the observation that, as the industrialized nations underwent development, their birthrates declined. Spokespeople from developing countries claimed that family-planning programs were undemocratic, because family planning was being imposed on poor countries by the rich nations out of racism or economic suppression; ineffective, because such programs had long existed in many poor countries with little success; and unnecessary, because development would both accommodate more people and encourage lower birthrates. While each of these arguments contained some truth, no one seemed to notice their inherent contradictions.

Recognition of rapid population growth as a hindrance to development in poor countries has increased markedly during the last decade. The presumption that the development process by itself can lower birthrates, moreover, has proven oversimplified; such

traditional measures of development as per capita GNP and urbanization seem to have little or no relation to fertility. But certain kinds of development—what demographers call "social development" (as opposed to "economic development")—apparently foster reductions in fertility as well as directly improve people's well-being. Prime factors of social development are education (especially for women); nutritional, health, and sanitation measures leading to increased life expectancy; and a vigorous family-planning effort.

Few developing countries now lack a family-planning program or a population policy of some kind—if only to better the health and well-being of their people by "spacing" births—and some have achieved impressive success in reducing their rates of population growth.

The People's Republic of China is perhaps the best-known example of this, having attracted much press attention for its "one-child-family" policy. But most attention has focused on the difficulty the government has had in establishing the policy and on the abuses that have attended it, and very little has been said about the reasons that China adopted such a severe policy in the first place.

China's delegation to the 1974 Bucharest conference was outspoken in its opposition to population limitation, asserting that of all resources "people are the most precious." Even then, however, China's family-planning program was among the strongest in existence. The Chinese policy seems to have been to minimize the number of births while maximizing the health and well-being of each child born.

In the late 1970s, Chinese leaders were jolted by the discovery that there were almost 100 million more people living in China than had been thought. This dismaying news prompted a clear-eyed assessment of the nation's resource base, the most limiting factor of which was found to be the availability of fresh water. Even under very optimistic assumptions regarding the nation's ability to manage its water resources, the government concluded that China could support no more than 800 million people on a sustainable basis at a decent standard of living.

China's population had already reached 1 billion when this conclusion was drawn, and China thus became the only nation in the world with an explicit goal not only of ending population growth as soon as possible but also of *reducing* its population by a sizable fraction. Fertility now is approaching "replacement level," at which the parent generation just replaces itself—slightly more than two children per family. But the momentum of population growth caused by the high birthrates of the recent past ensures a peak population of 1.2 or 1.3 billion before a decline can begin, even if the average number of children per family falls far below two.

Unfortunately, outside of China there is still much resistance to the concept of resource and environmental constraints on population growth, and few nations have assessed their resource bases as China did. Most industrialized nations lack even basic population policies. Although their populations are increasing relatively slowly—indeed, populations in some European countries have stopped growing and have even begun a gradual decline—the existing populations of the developed nations have a significant impact on both their own and the global environments. (See "Domestic Pressures" on page 38.)

If during the last decade population pressures on resources and the environment have become discernible in the United States and other rich nations, they have reached tragic proportions in many poor countries, where population growth rates range between 1.5 and 4 percent. By the simple, basic measure of their ability to feed expanding populations, more and more developing nations are not only failing the test, they are falling further and further behind. Sizable portions of the populations of most developing nations are significantly undernourished: perhaps 750 million people worldwide. UNICEF estimates that some 15 million children die each year of malnutrition and other poverty-related causes.

Grain exports to developing nations have risen dramatically since 1974, and agriculture has become a major focus for development assistance. Yet among the poorest nations—many of which have the fastest-growing populations—food supplies have remained inadequate. Indeed, in African nations south of the Sahara per capita food supplies have *declined* by more than 10 percent, and the people have experienced a visible deterioration of average living conditions. Today famine is raging in many of these countries in the wake of a ferocious continentwide drought. Such events, of course, have catastrophic impacts on people already living close to the margin. Estimated deaths last year were in the hundreds of thousands; without assistance on a large scale, many millions could starve this year.

In 1974, at Bucharest, the idea that widespread hunger in developing countries was a symptom of overpopulation was loudly denounced. Delegates from the Third World, asserting that the planet could feed many times its existing population, blamed their problems on poverty, inequities arising from the colonial era, and exploitation by rich countries.

It is true that in many poor countries agricultural resources—including the best land, fertilizers, and improved seeds—have been allocated to exportable cash crops at the expense of food crops for local consumption. Colonialism disrupted many productive traditional farming systems, and the rich countries have enjoyed—and have tried to perpetuate—exploitive trade policies toward the developing nations. Domination of the world's resources by industrialized nations has intensified population pressures in less-developed countries. But this is not the whole story. With regard to food alone, exports of cash crops to the rich nations are at least partly balanced by the rising imports of grains by the developing countries. The cash crops also earn foreign exchange needed to finance imports of oil and gas and other commodities essential for development.

A decade after Bucharest, people in many poor countries have begun to recognize the connections among population growth, faltering food production, deterioration of lands, environmental degradation, and economic problems of many kinds. A recent study by the United Nations Food and Agriculture Organization (FAO) should help put to rest the argument that developing countries could easily feed much larger populations if only they would cease growing cash crops for export and fully modernize their agricultural systems. Leaving aside the only-too-real economic and environmental barriers that prevent this from happening, the FAO has shown that limits to increasing food production do indeed exist.

The study rests on a number of highly optimistic assumptions: that *all* potentially arable land could be devoted to producing crops best suited to local climate and soils; that only subsistence foods would be produced; and that humid tropical-forest areas could be successfully converted to permanent agriculture. (The latter assumption is particularly questionable based on historical experience alone, even disregarding for discussion purposes the likely biological and climatic consequences of attempting such a conversion.) The study also does not take into account the implications for reduced productivity from the widespread deterioration of land resources that is occurring in developing countries—caused by factors that include desertification, salinization, and accelerated erosion of soils. The expansion and modernization of agriculture projected by the study could exacerbate these problems enormously.

Even with its optimistic assumptions, the FAO study concluded that by 1975 the populations of some developing regions had already outgrown their food-growing capacities under traditional agriculture—that is, agriculture using no modern high-yield seeds, fertilizers, or pesticides. Populations of several other regions will out-

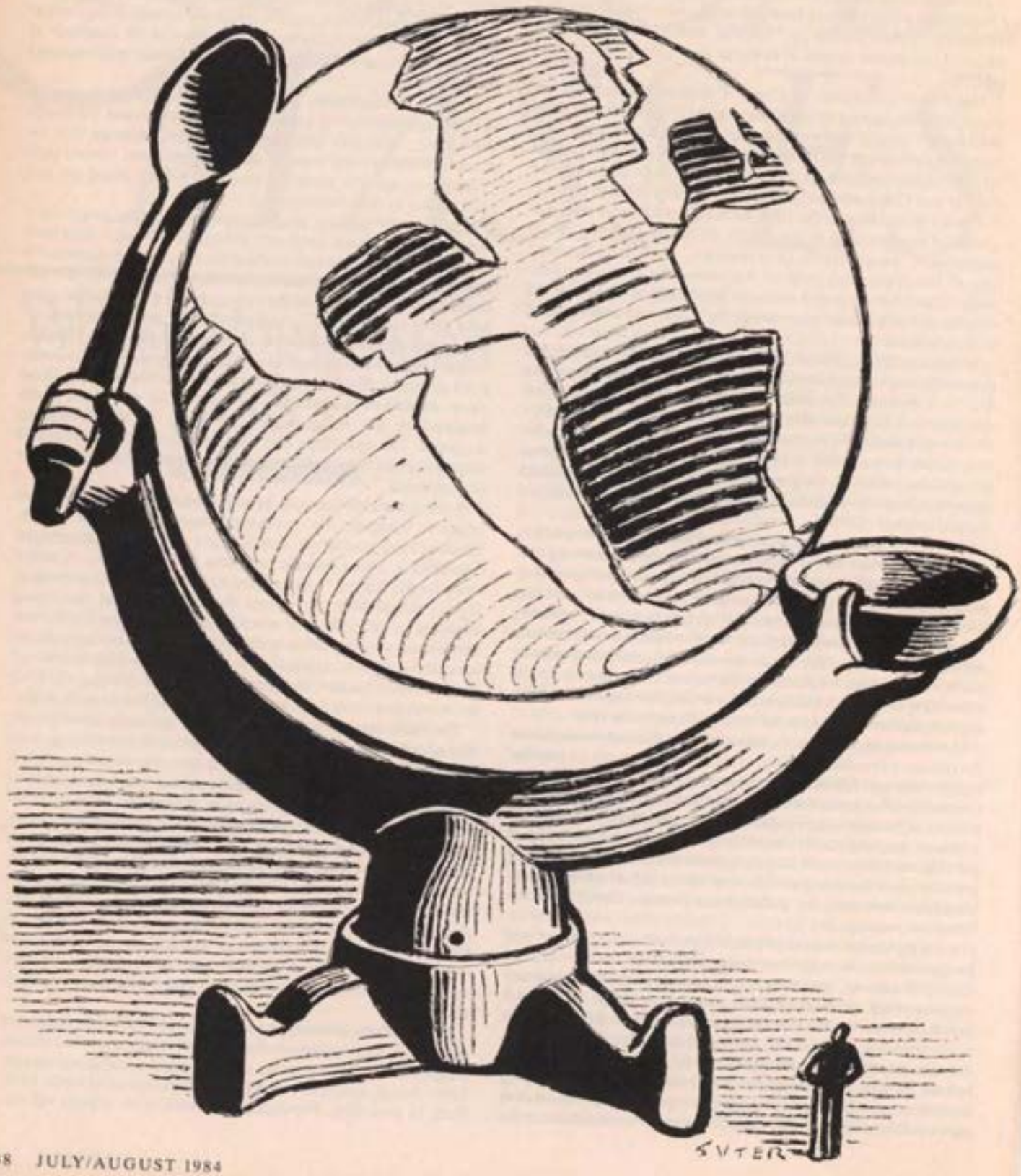

Illustration by David Suter

strip their food-production capacities by the year 2000 (only 16 years from now) even if all arable land is used to produce food, and even if agriculture is developed as far as is feasible by then.

Developing countries obviously have no choice but to continue trying to increase their food production, for several reasons. Their demographic structures commit most of these nations to at least a doubling, if not a tripling, of their populations before growth might be halted by even the toughest fertility-reducing policies. Furthermore, a strong agricultural base is essential to successful development of any country. Increasing worldwide dependence on grains imported almost exclusively from a single region is no way to enhance global food security. And the world's food exporters cannot keep boosting their production indefinitely to meet the rising demand from poor countries without seriously jeopardizing their own future productivity.

Considerable scope certainly remains for increasing food production in most developing regions. However, the currently dominant Western model for agricultural development is demonstrably unsustainable in the long term—especially when it is heavily based on such nonrenewable resources as petroleum. Moreover, the ecologically destabilizing effects of Western agriculture are likely to be even greater in tropical settings. At best, a transplanted Western agricultural system might produce larger harvests, but these might be comparatively variable and undependable. At worst, a large increase in food production might turn out to be only temporary, leading to an eventual collapse after supporting a substantial

DOMESTIC PRESSURES

AMONG THE NATIONS without a population policy is the world's leading industrial power: the United States. Most Americans take comfort in the delusion that, except for immigration, there is no population problem in this country. It has escaped the notice of many Americans that more than 1.6 million people are being added to the U.S. population each year by natural increase.

Americans are even less aware that continued population growth from both immigration and natural increase disproportionately add to pressures on the natural resources and economic systems of the United States and of the rest of the world. A high rate of resource consumption magnifies the impact of this country's population growth rate of 1 percent or more per year. (The exact rate depends on the unknown extent of illegal immigration.) Americans are world-champion consumers and polluters, drawing resources from every region on Earth while dispersing air and water pollutants and toxic wastes around the globe.

Other developed countries run us a close second. Together these nations, which contain only a quarter of the world's people, account for 75 to 90 percent of the world's annual use of mineral and commercial-energy resources. Their energy consumption is causing, among other problems, the acid rain that is killing fisheries and forests and posing a potential threat to agricultural productivity well beyond the developed nations' own borders. The burning of fossil fuels is also the principal cause of the buildup of carbon dioxide in the atmosphere, which scientists have recently predicted will lead to planetwide changes in climate on a scale far beyond historical experience.

While the rich nations' dominance of mineral and energy consumption is well known, it is generally less appreciated that the industrialized countries likewise control disproportionate shares of agricultural resources and products. From grains and fertilizers to tractors and meats, the rich nations consume 40 to 85 percent of the world's supplies.

It can be argued, of course, that America's exports are helping to feed the world. True, but we are not doing it out of charity. We are doing it to pay a huge oil import bill and to help compensate for the loss of other foreign markets to manufacturing competitors. The United States is by far the leading food-exporting nation in the world. We and a handful of other nations supply more than a hundred nations with grains, which are the main food base of humanity.

The pressure to export grains to the rest of the world has had detrimental effects on the American agricultural system. To boost production, the Soil Bank and other soil-conservation measures have been abandoned, and soil erosion has soared to levels as disastrous as those in the Dust Bowl days. (See "Soil Conservation," *Sierra*, November/December 1983.) Overgrazing, unwise cultivation, and poor irrigation practices have led to desertification in the western United States, just as they have in arid and semi-arid lands around the world. Falling yields have already been observed in some areas; if soil losses and desertification continue unchecked, declines in productivity may become both noticeable and largely irreversible within a few decades.

The nation's groundwater is also being sacrificed to the agricultural push. Spectacular increases in U.S. wheat and corn production over the last two decades have been gained in part by pumping out the fossil water that lies beneath the Great Plains. The escalating competition for water in the western United States is a symptom of the pressure that rising population exerts on a scarce resource.

Consumption patterns also play an important role. If the fossil-fuel usage of an industrialized nation were cut in half, not only would pressures on finite fossil-fuel reserves be eased but many pollution problems would be reduced as well.

To ease the pressures on renewable resources, however, it may be more feasible and effective to control the number of consumers. The average person still needs approximately 2,500 kilocalories of food per day. A substantial cutback in meat consumption would reduce pressures on our agricultural resources somewhat, but vegetable foods would have to replace the meat. Most Americans would see this exchange as a sharp decline in their standard of living. By contrast, commercial energy use per person can be (indeed, has been) considerably reduced without seriously diminishing the quality of life.

Reducing each person's consumption of resources only temporarily mitigates the impacts of an increasing population. Despite the reductions in per capita energy use as a result of conservation in the United States since 1970, for instance, total energy consumption could return to its former levels simply because there are more people.

The underlying contribution of population growth to the increasing competition for America's limited resources—clean air and water, prime farmland, forests, wilderness, and recreational areas—must not be forgotten. Those who doubt that population growth is a part of our environmental problems might ask whether the problem would exist—or be so intense—if our population were not growing.—*A.E.*

population expansion. Thus, looking ahead at the global food-production situation, as well as at the increasing constraints on other resources of all kinds and the growing symptoms of damage to the environmental underpinnings of the entire enterprise, one can see no reasonable alternative to a serious worldwide commitment to population control.

The 1984 International Conference on Population, to be held later this month in Mexico City, offers a splendid opportunity to focus world attention on the proliferating problems associated with (and amplified by) continued population growth. China's example in resource assessment and the tragic situation in Africa could be starting points for discussion. And the developed nations, already approaching (or, in a few cases, below) zero population growth, are in a prime position to lead the world toward population reduction.

Unfortunately, the United States delegation is unlikely to provide leadership in spotlighting these issues. The Reagan administration may choose in selecting that delegation to please the Moral Majority by downplaying this nation's role in supporting family-planning activities abroad, or else elect to appeal to Republican moderates by being relatively cooperative in supporting the status quo. Whichever constituency is favored, it is unlikely that limits to population growth will be emphasized.

Indeed, it is not clear that the most controversial resource and environmental issues have thus far received adequate attention from the United Nations in its preparations for the conference. Unless other national delegations or nongovernmental organizations put these issues on the agenda and insist that they be addressed meaningfully, the conference may content itself with examining the less controversial benefits of slower population growth in purely social and economic contexts.

Such a conference would certainly be more peaceful than the first one—but it would be far less relevant to the goal of world security. The strident exchange of views in Bucharest led eventually to the resolution of many important issues and the development of beneficial population policies at national and regional levels. In Mexico City this year, a similar airing of the clearly emerging resource and environmental constraints on global population growth could lead to a new understanding of the urgency of limiting such growth. With this awareness the majority of nations could make a new commitment—not only to end their population growth as rapidly as possible, but to embark thereafter on a gradual decline to a population of sustainable size. □

Anne Ehrlich, a senior research associate in biology at Stanford University, is co-author of Extinction *(Random House, 1981).*

PROGRESS TOWARD A POPULATION POLICY

JUDITH KUNOFSKY

Sierra Club leaders began paying attention to population growth in 1957, when the issue was mentioned at that year's Wilderness Conference. Population policy was discussed for many years afterward at subsequent conferences. In 1964 the Board of Directors resolved that the Club should study and publish materials on the impact of population growth on wilderness and parks. A *Sierra Club Bulletin* article in December of that year, written by Club leader Dan Luten, stated that "wildlands conservation organizations should willingly acknowledge that population is the common denominator of all resources problems." Luten further observed that "here [in the U.S.], no less than in the poor lands, a cessation of population growth is imperative."

The keynote address at the 1969 Wilderness Conference was given by biologist Paul Ehrlich, who told the group, "Putting aside a park here and there is laudable, but not enough. Unless we attack the worldwide problem [of population growth], putting aside parks is a waste of time." The year before, the Sierra Club had published Ehrlich's book *The Population Bomb*, which fostered a movement in this country to end population growth.

Later in 1969 the Board of Directors called for an end to population growth in the United States "in order to achieve balance between population and resources." The Board urged a change in all government programs that promote population growth, endorsed making birth-control programs available "to every member of our society," and supported the legalization of abortion. The Club further called for expansion of environmental, population, and sex-education programs and an end to "laws, policies, and attitudes . . . which attempt to constrict the roles of men and women."

Club policies were expanded in 1978 to include support for an explicit national population policy in this country. "All nations of the world, including developed nations," said the Board of Directors, "should formulate and participate in programs designed to curb their own population growth. All developed nations, including the United States, being the countries with impact on the world environment disproportionate to their population sizes, have an obligation both to end their population growth as soon as feasible and to reduce substantially their consumption of this planet's nonrenewable resources." Accordingly, the Sierra Club is supporting two pieces of legislation—H.R. 2491, introduced by Rep. Richard Ottinger (D-N.Y.), and S. 1025, introduced by Sen. Mark Hatfield (R-Ore.)—that would both establish population stabilization as a national goal and set up an interagency Council on Global Resources, Environment & Population to oversee the development of an explicit population policy to be proposed to Congress.

The Sierra Club has had a staffed population program for the past 10 years, focusing on support for a national population policy and on education about how population projections are used by local, state, and federal agencies. Staff and volunteers offer information on the population component of environmental problems and represent the Club on population issues before Congress, administrative agencies, and the public. A European affiliate of the Club's International Program participated in the United Nations World Population Conference in 1974, and Club representatives will be attending the second conference in Mexico City this year.

Available from the Club's population program are a free bimonthly newsletter, *Population Report*; a variety of brochures describing the Club's support for population stabilization; and speakers, workshop leaders, films, and slide shows for chapter and group meetings. For free subscriptions to *Population Report*, a compilation of "Resources & Materials Available," and/or copies of "The Need for Zero Population Growth" and "Population Stabilization and the Sierra Club's Priorities," please write to Judith Kunofsky, in care of the Sierra Club, 530 Bush St., San Francisco, CA 94108.

Judith Kunofsky, former president of Zero Population Growth, now directs the Sierra Club Population & Growth Policy Program.

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ELECTION 1984

FRIENDS ON THE HILL

No matter who wins the White House, environmentalists need help from Congress.

BYRON KENNARD

IN A PRESIDENTIAL election year, public attention is riveted on the race for the White House. If a candidate sneezes, the press is there to put it in the headlines and on the television news, and we environmentalists are among those watching with rapt attention. Given the unprecedented anti-environmentalism of the Reagan administration, this attention is well warranted. We've got a big stake in the outcome.

But this is also an election in which a third of the Senate seats and all 435 seats in the House of Representatives are to be filled. By comparison, we hear next to nothing from the media about how these races are shaping up. However, the nature of the interactions among Congress, the President, and the public is such that the results of the congressional races are as crucial to environmentalists as is the presidential election.

Historically, the relative responsiveness and accessibility of Congress has made it the environment's best friend in Washington, whether the issue is a traditional one such as wilderness preservation, or a new one such as acid rain. Indeed, except for the presidency of Theodore Roosevelt and possibly that of Lyndon B. Johnson (thanks in part to Mrs. Johnson), it is hard to think of a chief executive who outdid Congress at environmental protection.

While executive agencies often handle the daily management of our nation's resources, the ground rules are written by Congress, and it is often Congress that sees that the rules are carried out. Federal agencies, for example, are required to analyze the effects of their proposed actions through the environmental impact statement process. Congress adopted this mechanism in 1969 when it passed the National Environmental Policy Act (NEPA), but it took a decade of struggle in the courts and in Congress to compel most agencies to comply with NEPA. If powerful members of Congress had not pressured the executive branch, compliance would never have happened, even under such a sympathetic President as Jimmy Carter.

The White House stays for the most part immersed in foreign, defense, and economic issues; a wilderness campaign with one hundred volunteers may not loom large from the President's perspective. But, since representatives and senators must answer to constituencies that are local or statewide in composition, the same campaign and volunteer force can appear immense to a member of Congress. Likewise, the daily work of the President is not apt to include personal association with state and local Sierra Club leaders, but it is likely that members of Congress will know their names and faces. This personal interaction between politicians and environmental activists is the richest soil in which to plant ideas.

The next Congress offers a particularly critical set of reasons for acting to ensure that it is environmentally sympathetic, namely: the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, the Federal Insecticide, Fungicide and Rodenticide Act, the Resources Conservation and Recovery Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

These seven major environmental laws were passed in the 1970s, and their renewal and/or modification has been blocked by one controversy or another for more than three years. As long as Congress provides money to administer the laws, they remain in force, but the deadlock cannot go on forever. When these statutes are "fine-tuned," environmentalists must see to it that as many legislators as possible are in favor of stronger laws.

Other key federal environmental programs will be under heavy attack next year in Congress as well. These

Only a Congress that believes it was elected with a clear, unequivocal directive to protect the environment will use the tools the Constitution gives it.

include the Alaska Lands Act, the Coastal Zone Management Act, the Land and Water Conservation Act, and the Wild and Scenic Rivers Act. The single best opportunity to defend these laws and programs presents itself not in the next session of Congress, but in the campaigns for the House and Senate forming right now.

Congressional campaigns, fortunately, are ideally suited for an organization such as the Sierra Club. Like the Club, these campaigns are locally organized, they are heavily dependent on volunteer effort, and they are rooted in the concerns and passions of their districts. Thus, the grassroots strength of the Sierra Club makes a bigger difference in congressional races than in the presidential contest.

Each presidential candidate receives approximately $40 million in public money to run his campaign, and is forbidden by law to spend more than that. Inevitably, most of this will be budgeted for national and regional media, leaving little to establish a volunteer structure. But congressional candidates must raise their own funds and are not limited in what they may spend. The result is that most congressional candidates have a much greater need, and capacity, to enlist volunteers to raise money, to run phone banks, and to walk precincts. The Sierra Club's clout, therefore, has a bigger payoff in congressional races.

Participation in House and Senate races also enables environmentalists to maintain a bipartisan approach. There is only one presidential race: If we enter that race, we inevitably support the candidate of one party—and this year it will be the Democrats. But historically it has been the Republican Party that provided much of the leadership on many environmental issues, and that wing of the party is still strong in Congress, particularly in the Senate. It was the work of environmentalists that helped return these Republicans to Washington in 1982. As this article goes to press, the Senate Environment Committee has approved a strong acid-rain control program (which the House Energy Committee has rejected). This would not have happened had environmentalists not rallied in 1982 to the defense of Robert Stafford (R-Vt.), who chairs that Senate committee. Stafford has also reported a Clean Water Act revision substantially better than the House bill, this time with the aid of Sen. John Chafee (R-R.I.).

The split within the Republican Party on environmental issues has blunted the thrust of much of what the Reagan administration has attempted. Our best tool for ensuring the viability of the environmental wing of the Republican Party is massive involvement in House and Senate races.

To comprehend how environmentally significant the next Congress will be, it is necessary to do a little forecasting. What will the political situation be if the Democrats win the White House? What if the Republicans win?

If the Democrats win, environmentalists will be out front among those leading the cheers. Obviously, we're bound to be much better off with a friend in the White House who is under some obligation to us. For openers, we can expect a new Democratic administration to make good appointments to federal posts affecting the environment.

But the cheering might stop once these appointees take office to find themselves administering depleted, demoralized bureaucracies and, what is worse, to find themselves lacking the power or the means to restore those bureaucracies to health.

GREENING THE CONGRESSIONAL ELECTIONS

THROUGH THE Sierra Club Committee on Political Education (SCCOPE), Club chapters across the country have endorsed close to 100 congressional candidates. Each SCCOPE endorsement is based on the candidate's strong support for local as well as national environmental programs and legislation. Below is a sampling of the House and Senate races in which the Club is involved.

• *ALBERT GORE, TENNESSEE.* Rep. Gore (D) is campaigning for the open Senate seat now held by Majority Leader Howard Baker (R). As a member of the House, Gore was an early advocate of the Superfund and a leader in fighting for stringent regulation and enforcement of hazardous-waste disposal programs. He was one of the first members of Congress to call attention to EPA Administrator Anne Burford's record and activities. Gore's campaign has highlighted the toxic-waste threat.

• *LLOYD DOGGETT, TEXAS.* In a June runoff primary, SCCOPE-endorsed candidate Doggett upset Rep. Kent Hance (D) for the Democratic nomination in Texas's U.S. Senate race. Doggett, a state senator who has been an outspoken leader on environmental legislation, will face Rep. Phil Gramm (R) in the November election. Gramm consistently has had one of the worst environmental records in Congress.

• *LES AUCOIN, OREGON.* Five-term incumbent Rep. AuCoin (D) faces one of his toughest reelection battles. AuCoin played a major role in the passage of the Oregon Wilderness Bill, and as a member of the Appropriations Committee he worked to establish a moratorium on offshore leasing. He is also a leading opponent of the MX missile.

• *GERRY SIKORSKI, MINNESOTA.* During his short tenure in Congress, Rep. Sikorski (D) has quickly emerged as a leader on environmental legislation, working closely with Rep. Henry Waxman (D-Calif.) in drafting the leading acid-rain proposal in the House. Environmental issues are a key part of Sikorski's reelection platform.

Where several agencies are concerned, the Reaganites have pursued a scorched earth policy, and the Democrats will inherit the charred remains.

For example, it takes years to build up competent scientific research capabilities. When EPA Administrator Anne Gorsuch cut the agency's research program in half, she literally determined that the hundreds of senior scientists and thousands of graduate students conducting long-term research would not be around. These staff people are now in other places, doing other work. The research will have to begin anew. But will it?

If the Democrats win, it is unlikely to be in a landslide that conveys a mandate for the resurrection of the New Deal/Great Society, and it is very unlikely that a Democratic victory will be interpreted by anyone, including the victor himself, as a call for a return of "big government." In such a climate, all new spending and regulatory programs will tend to be seen as "unpopular."

A close election will also leave the Democratic victor exceedingly cautious, and bold initiatives will be few. As a matter of political necessity, each budgetary increase or expansion of federal regulatory authority will be subject to severe scrutiny at the White House. There will be fierce competition for money, power, and attention from the administration among the numerous constituency groups that supported the new President. Environmentalists will have a place at the table, but they will have to fight as hard as anyone for additional money or new authority for their programs.

The views of individual members of Congress will weigh heavily in this competition. During Reagan's first years, for example, a major obstacle to increasing funding for the EPA was presented by Rep. Edward Boland (D-Mass.), who chairs the subcommittee with jurisdiction over EPA and public housing appropriations. Boland cautioned that more money for the Superfund meant less money for housing, and many representatives voted accordingly. If key subcommittee chairs continue to see adequate funding of environmental programs as a secondary priority, the new administration will be much less likely to push for increases.

And environmental programs will have their same adversaries, even with a sympathetic administration in power. The special interests will, once again, resort to their old alliances on Capitol Hill. Lobbyists who have done business for four years with Watt and Crowell and Gorsuch will be back in the House and Senate office buildings, cutting appropriations and killing bills and attaching riders—unless environmentalists have friends in Congress to stop them.

What role will Congress play if Reagan is reelected? Here history must serve as a guide. During the first three years of Reagan's term, Congress fairly consistently blocked his legislative initiatives on the environment. But the record of positive congressional action to reverse the decisions of Reagan and his appointees is more erratic.

While Watt got his hands slapped fairly often, until her last days Anne Gorsuch escaped with relatively little direct congressional interference; by the time she left she had demolished much of the EPA. Part of the difference between the congressional response to Watt and to Gorsuch is that the Interior Secretary became intensely unpopular far faster, and part is that Interior is an older agency with stronger links to Congress. But the lesson is that Congress cannot be counted on to intervene directly in the running of departments and agencies even if it is in strong disagreement with the way things are being administered.

If Ronald Reagan is reelected, the odds are that the war on the environment will move from its present stalemate to another lightning assault. Congress has the power to stop much of this, but it ordinarily leaves the President free to run his departments on the basis of his own attitudes, unpopular and unrepresentative though they may be. Only a Congress that believes it was elected with a clear, unequivocal directive to protect the environment will use the tools the Constitution gives it. And only senators and representatives who see environmentalists massively active in their election campaigns and those of their colleagues will acknowledge that directive.

Ronald Reagan faced more resistance to his environmental initiatives than most Presidents. Involvement in the House and Senate races this year is our insurance policy that if, in spite of our best efforts, he is reelected, the resistance will be even greater during his second term. But win or lose the White House, environmentalists need to make sure that a Congress favorably disposed toward our planet is sworn in alongside the newly elected President next January. □

Byron Kennard, a community organizer living in Washington, D.C., is author of Nothing Can Be Done, Everything Is Possible *(Brick House, 1982).*

• *Jerry Patterson, California.* Incumbent Rep. Patterson (D) is facing a tough challenge from former Rep. Robert Dornan. While Dornan had a poor environmental record in Congress, Patterson has been a strong voice on the Interior Committee and is an advocate of California wilderness legislation as well as other state-park and wilderness issues.

• *Jamie Clarke, North Carolina.* Rep. Clarke (D) faces a difficult race to retain his seat. As an Interior Committee member, Clarke helped speed the North Carolina Wilderness legislation through the House after years of delay. Clarke also has dedicated himself to the passage of a Smoky Mountain Wilderness bill.

• *Stewart McKinney, Connecticut.* In addition to his efforts to protect Long Island Sound, Rep. McKinney (R) has supported strong versions of the Clean Air and Clean Water acts. He was an original sponsor of the Solar Bank Bill and consistently has advocated government funding for renewable-energy research and development.

• *Tom Harkin, Iowa.* The Club's Iowa Chapter has jumped into electoral activities in support of the senatorial bid of Rep. Harkin (D), who is challenging incumbent Sen. Roger Jepson (R). As a member of the House, Harkin has an excellent record, and he has been a leader on energy-conservation and utility legislation. Jepson, in contrast, has often voted against crucial environmental legislation in the Senate.

• *Jim Hunt, North Carolina.* The North Carolina Senate contest has been called "the Race of the Titans," in which Gov. Hunt (D) is challenging incumbent Sen. Jesse Helms (R). The Club's Le Conte Chapter has endorsed Hunt, who has a strong environmental record in the state. Wilderness activists remember his key role in drafting the compromise North Carolina Wilderness bill, which Helms later defeated in committee. Helms has one of the poorest environmental records in the Senate, and has been a vociferous critic of key conservation legislation.

• *Jane Wells-Scooley, Pennsylvania.* The Sierra Club endorsed Wells-Scooley for the Democratic nomination in Pennsylvania's 15th congressional district. Having won this first contest, Wells-Scooley, former president of the National Organization for Women, will face incumbent Rep. Don Ritter (R) in November. Ritter, a member of the Energy & Commerce Committee, has been an opponent of the Clean Air Act and other basic conservation laws.

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Larry Nielson,
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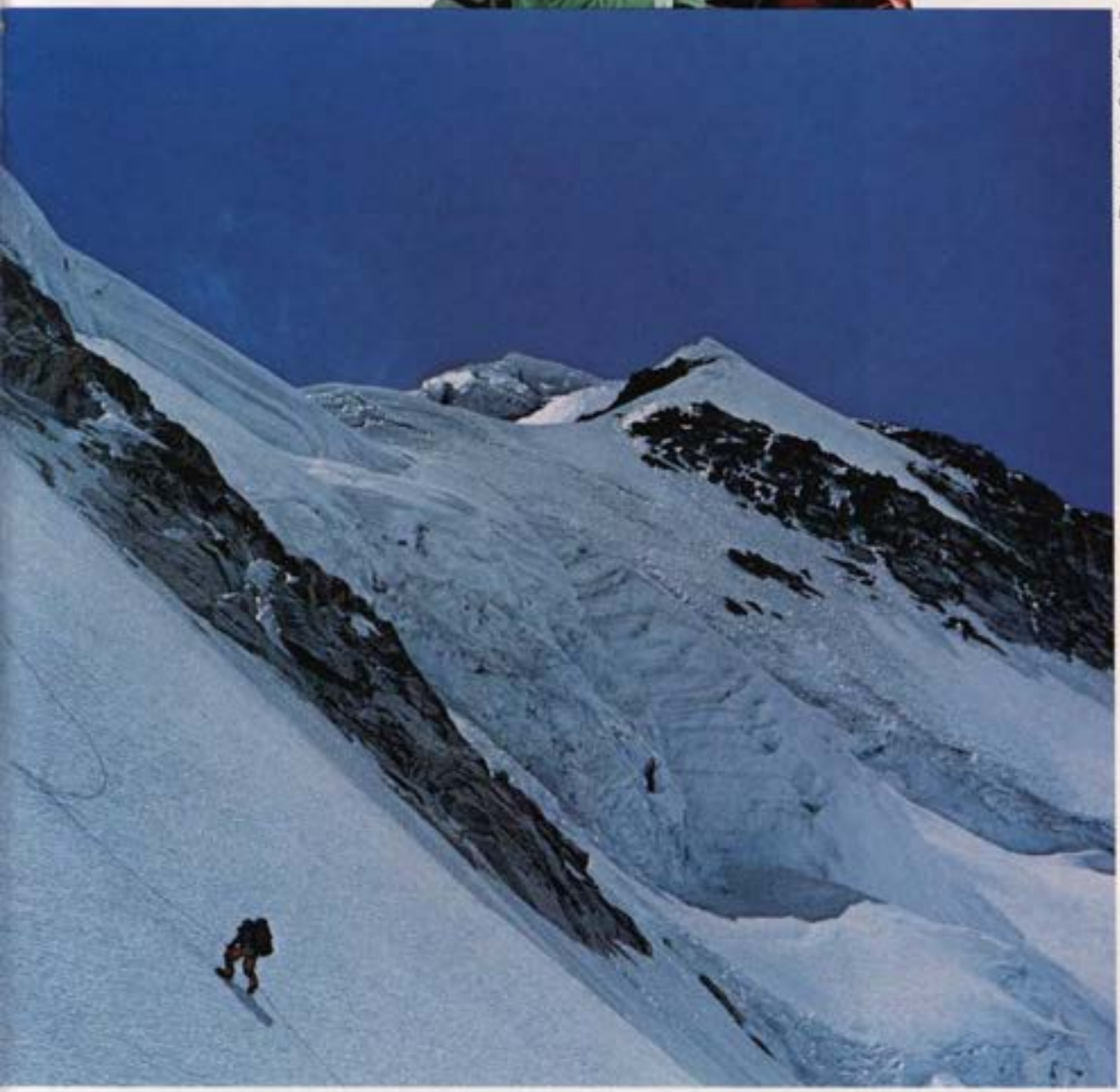

Photograph by Galen Rowell.

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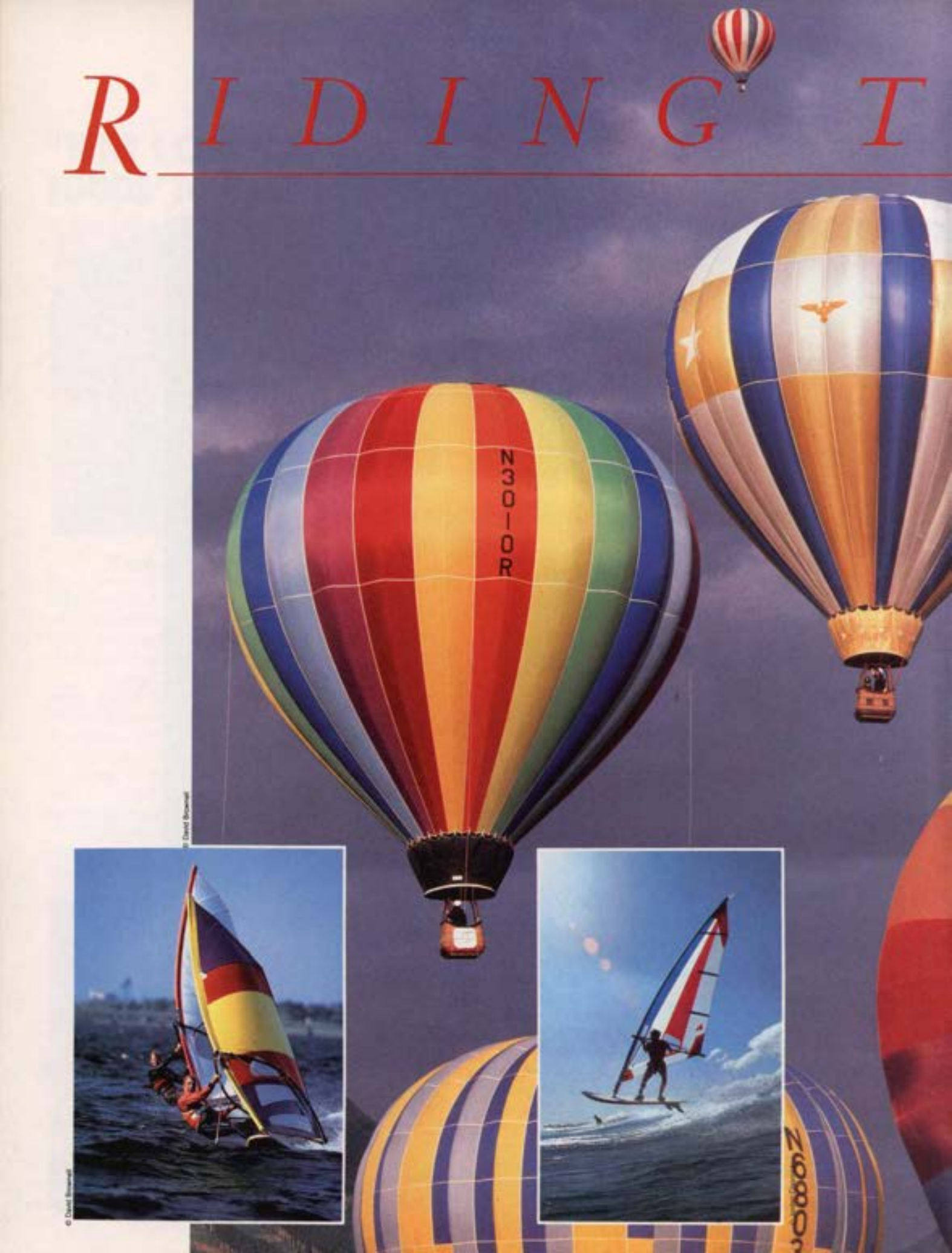
RIDING T



THE WIND

Call it gentle Zephyrus or capricious Mariah, the wind is one of nature's elemental forces. To ride it, by soaring like a hawk on high-climbing thermals, by floating free as a cloud in a hot-air balloon, or by skimming the waves like a water sprite, demands an intimacy with nature that we normally reserve for mountain climbing, spelunking, or even backpacking. Compared to these more traditional outdoor activities, windsports are high-tech pursuits. They depend on sophisticated machines made of space-age materials—tough, paper-thin fabrics and strong, lightweight alloys—and on advanced aerodynamic designs. Yet unlike trail bikes or speedboats, these machines work *with* the environment—in fact, proficiency at these sports increases rather than diminishes the participant's contact with and knowledge of the natural world. The machines are only a small part of the sport, its brushes and easels. The wind is its true medium—and its final message.

GALE WARNER

STAKING CLAIMS ON THE LAST FRONTIER

ANTARCTICA IS NOT QUITE of this world. Spectacular canyons, pellucid air, mountains 16,000 feet high thrusting through permanent ice, temperatures suitable for Mars, huge weathered icebergs, teeming penguin colonies, and a notable absence of strife among human occupants: No other wilderness on Earth can match Antarctica's size, purity, and grandeur.

Science is the common ground upon which Antarctica's peculiar political system is built. Sixteen countries cooperatively manage the continent and promote the principles of peaceful research, nonmilitarization, and environmental protection outlined in the 1959 Antarctic Treaty.

But the nations of the world may soon no longer be content to extract only knowledge from the seventh continent. Anxious appraisals of the Earth's dwindling resources have fueled speculation about possible Antarctic oil and minerals. For two years nations signatory to the Antarctic Treaty have been quietly negotiating a "minerals regime," a legal framework that would allow licensing, exploration, and exploitation of Antarctica's natural resources to proceed in an orderly fashion. The critical question of whether these resources, if they exist, should be developed at all is in danger of never being thoughtfully asked.

Inspired by the successful scientific cooperation that characterized the 1957–58 International Geophysical Year, the 12 nations then participating in Antarctic research met in Washington, D.C., to work out "joint administrative agreements" for the continent. The result was the Antarctic Treaty, a document of great significance not only because of the speed with which it was negotiated but also because it was signed at the height of the Cold War—a time when an agreement embodying the principles of peaceful cooperation and exchange could hardly have been less likely.

By 1959, seven nations (Argentina, Australia, Chile, France, Great Britain, New Zealand, and Norway) had already laid claim to pie-shaped slices of the frozen continent. The United States and the Soviet Union intentionally asserted no claims, preferring to move freely about Antarctica and to reserve the right to make a claim at any time. They joined the other nonclaimant states in ignoring the existence of any claims. (Originally, these nonclaimant states included Belgium, Japan, and South Africa; Poland, West Germany, Brazil, and India were more recently admitted to the treaty "club.") The volatile issue of who owned Antarctica was addressed by delicately ambiguous wording in the treaty: "No acts or activities taking place while the present treaty is in force shall constitute a basis for asserting, supporting, or denying a claim to territorial sovereignty in Antarctica." Despite the overlapping of many claims (see map, page 53), all nations have continued to exchange information in ways that would be unthinkable in other parts of the world.

Nevertheless, political maneuvering in Antarctica has been motivated partially by fond hopes that eventually the area would prove to be a rich storehouse of mineral wealth. Real enthusiasm for Antarctic oil flourished during an era of consternation over rising energy prices: An oft-quoted 1974 United States Geological Survey (USGS) report estimating that 45 billion barrels of oil lie beneath the continental shelf raised many eyebrows. Sanguine predictions of oil fields comparable to those in Saudi Arabia were given credence by the detection of hydrocarbons in test holes drilled by an American ship in the Ross Sea. A 1976 State Department report hazarded that oil reserves "could be in the range of tens of billions of barrels."

But more recent USGS reports stress that while seismic surveys indicate thick sedimentary basins in the Ross, Weddell, and Amundsen seas, the evidence for oil is still sketchy. As David Elliot, a geologist who is director of Ohio State University's Institute of Polar Studies, points out: "When you compare [Antarctica with] the eastern seaboard of the U.S.—the subject of a comparably vast number of studies that revealed the strong possibility of oil, but which has so far produced virtually nothing—you can see that to presume there are huge oil fields in Antarctica is to go beyond current scientific information. But on the other hand, you can't disprove it."

It is also possible that Antarctica may have sizable deposits of strategically important minerals. Plate-tectonic evidence suggests that Antarctica was once part of an

A polar ship makes its way toward the Antarctic continent, which pack ice renders inaccessible from mid-March to December. Opposite page: the extent of the summer thaw.

ancient supercontinent geologists call Gondwanaland, and there are geologic similarities between the mineral-rich Bushveld Complex in South Africa and the Dufek Massif in Antarctica's Pensacola Mountains, where traces of platinum, titanium, cobalt, nickel, uranium, molybdenum, and chromium have been found.

Antarctica's climate makes it exceptionally ill-suited for industrialization, however. A list of the factors that might prove discouraging to would-be developers has to include the continent's short summer season, its distance from supplies, labor, and markets, and its frequent storms, persistent winds (commonly reaching 200 miles per hour), and extreme cold. The world's lowest temperature (minus 127 degrees Fahrenheit), was recorded in Antarctica, and minus 35 degrees is considered a warm summer's day at the South Pole. In typical Antarctic weather a dropped steel bar can shatter like fine crystal.

Offshore oil operations would have to contend with some of the roughest seas in the world, unpredictable currents, an unusually deep continental shelf, and colossal "scouring" icebergs capable of shearing off underwater production rigs. (One iceberg approximately the size of Massachusetts was recently sighted near the Ross Ice Shelf.) Pack ice can suddenly close in and crush even hardened ships; last year a 6,600-ton U.S. icebreaker, the *Westwind*, suffered a 50-yard-long gash in its port side when it was unexpectedly trapped in ice in the Weddell Sea.

Mining on the continent would be even more problematic. Nearly 98 percent of Antarctica is covered by an immense icecap that averages more than a mile in thickness; this icecap depresses one third of the continent's landmass below sea level and contains 90 percent of the world's ice and 70 percent of its fresh water. Huge quantities of energy would be needed to melt the ice so that mineral deposits might be reached. Overland transport and shipping would be technically nightmarish—in winter, pack ice forms an impenetrable ring around the continent that extends as far as 1,000 miles from land.

Whether resource exploitation would ever be less than prohibitively expensive is open to question. According to Columbia University economist Giulio Pontecorvo, "There are so many alternative sources of oil all over the world that I think people are going to look elsewhere for a long time before they look to Antarctica. It would be an awfully long pipeline." In a recent USGS report, geologist John Behrendt cautioned, "It is probable that nothing smaller than giant, and more probably supergiant, fields would be economical in the harsh Antarctic environment."

Political factors, however, could warp economic ones. As Barbara Mitchell points out in her book *Frozen Stakes: The Future of Antarctic Minerals*, "Energy supplies are so liable to fluctuation that a secure supply, be it in Antarctica or the moon, may be too valuable to be left alone." Governments might be encouraged to underwrite risky investments in oil exploration by their desire to enhance sovereign claims and their eagerness not to be left behind should a minerals regime open some areas to leasing. (In 1970, Texaco attempted to obtain an Antarctic exploration license, and Gulf has repeatedly expressed its interest in carrying out intensive surveying.)

Five countries have recently completed or are currently conducting seismic "geophysical research" on the continental margins. Digging for minerals on land is considered even more economically preposterous than exploration at sea, but again, in the words of David Elliot, "The real wild card in the pack is the political end of things." He continues: "The world platinum market is controlled by a relatively few countries. If, for example, there were radical political changes in South Africa, the West could become very interested in the resource potential of the Dufek Massif. The Soviets' extensive work there shows that we're not the only ones interested. The question becomes how inaccessible the area and its resources really are."

Despite its reputation as a bleak desert of ice, Antarctica is an unparalleled wildlife sanctuary. Shrouded by darkness half the year, but bathed in almost continuous light the other six months, the Southern Ocean's

Photograph by Bruno J. Zehnder, New York City

The ice sheet of Antarctica, formed sometime between 25 million and 42 million years ago, covers about 98 percent of the continent. Coastal temperatures rarely rise above freezing.

© Wolfgang Kaehler

Charles Nesbitt

Adelie penguins (above) return to Antarctica each spring to breed. Some Adelie rookeries contain up to 250,000 birds. A Weddell seal (below) rests on the shore. A deep diver, the Weddell has eyes especially adapted for low-light underwater vision.

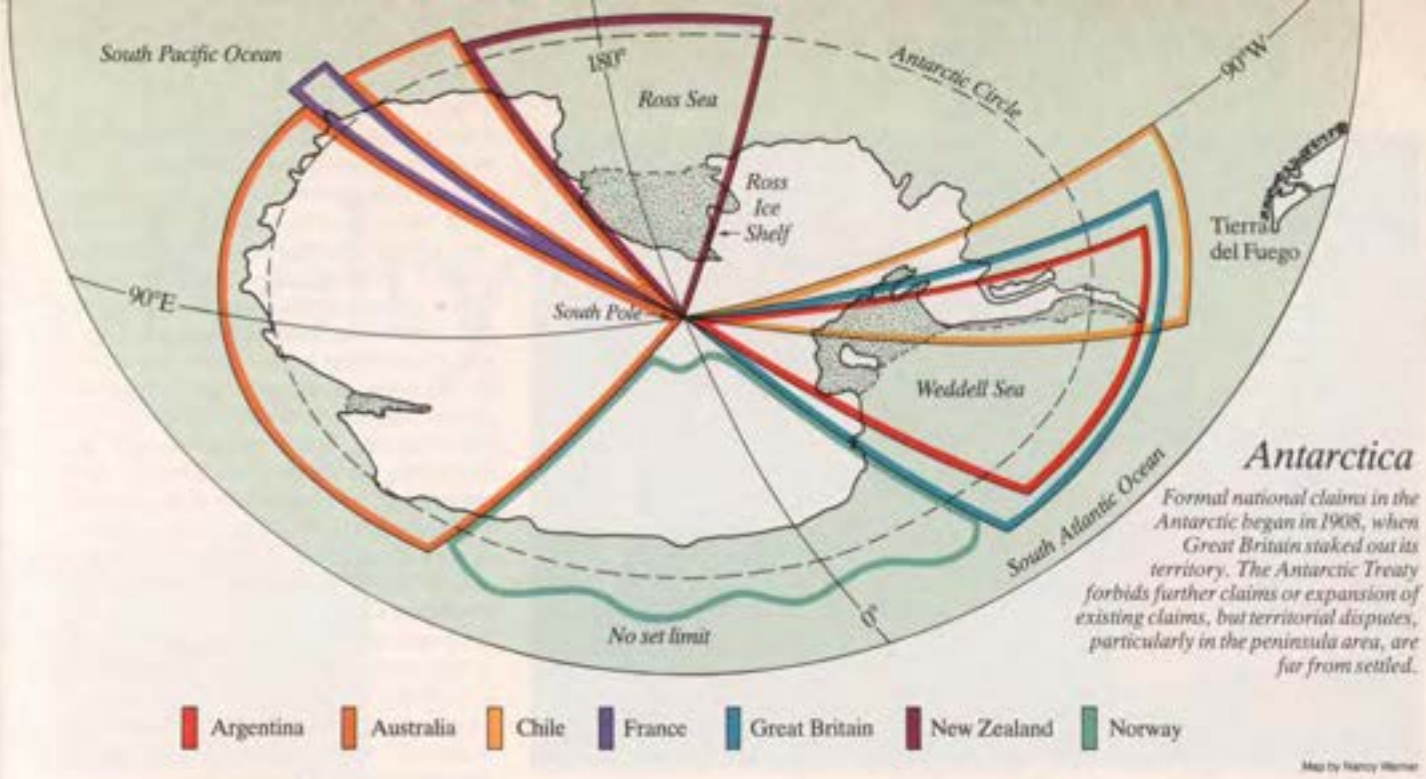
frigid, nutrient-rich waters support a highly productive marine ecosystem. Whales (including the endangered blue, fin, humpback, and southern right species), seals, penguins, squid, fish, and pelagic birds all feed on an abundant, shrimplike crustacean called krill. Although the continent has only two species of flowering plants and no resident land animal larger than the wingless midge, hundreds of species of algae, mosses, and lichens have managed to adapt to its extreme conditions. Mysteriously snow-free "dry valleys" were thought to be completely lifeless until a healthy microflora of lichens and bacteria was discovered living *inside* porous rocks.

Given the continent's unique living systems, exploratory activities could wreak nearly as much havoc as actual development might. Even prospecting may pose significant risks: Evidence from the Arctic indicates that intense seismic surveying creates enough noise pollution to disturb feeding whales. Another major risk is the possibility of a blowout or a tanker spill. Oil slicks caught in circular currents and carried ashore could have disastrous effects on breeding birds and seals. Slicks might also impair the formation of pack ice while damaging the algae that grow on the ice's surface. (These algae generate about 20 percent of the Southern Ocean's primary photosynthetic production.)

Control and cleanup of a significant oil spill could be hampered by the short season. If pack ice were to move in before a gusher could be capped, the oil could flow beneath the ice for nine months. *Any* release of oil, including the low-level emissions that normally accompany oil-production activities, may have disproportionate consequences in the icy Southern Ocean. Oil may persist up to 100 times longer in that environment than in temperate oceans, and the lack of natural oil seepage in Antarctica has raised fears that no oil-degrading bacteria may be present there.

Antarctica's severe cold means that biodegradation takes place very slowly; no softening cover of weeds hides scars on the land. Mines would have severe local impact—a footprint scar in Antarctic moss takes a decade to heal—and would spew particulates into Antarctica's unpolluted air, diminishing the continent's value as a pristine laboratory for monitoring global pollution levels. A layer of dust on the ice could precipitate melting and alter the reflectivity of the icecap, which is thought to play a crucial role in regulating global climate.

Perhaps the most serious and unavoidable impact of minerals development would be the direct competition between production facilities and wildlife for ice-free coastline. This raises a thorny issue: What constitutes



Antarctica

Formal national claims in the Antarctic began in 1908, when Great Britain staked out its territory. The Antarctic Treaty forbids further claims or expansion of existing claims, but territorial disputes, particularly in the peninsula area, are far from settled.

Map by Nancy Warner

"acceptable environmental damage" in an unspoiled area bigger than the U.S. and Mexico combined?

A 1979 report by an independent advisory group, the Scientific Committee on Antarctic Research (SCAR), expressed a startlingly cavalier attitude. After listing the "severe and irreversible local impacts" of an oil spill, the report stated that these impacts' "overall effects may not be significant, because the area involved would be slight in relation to the total area of coastline or exposed rock or soil. . . . Because the overall number of penguins is so vast and the breeding colonies are widespread, even the destruction of a complete colony would be insignificant in relation to the total stock."

Explains Robert Hofman, a biologist with the Marine Mammal Commission and science advisor to the U.S. Antarctic delegation, "If we apply the conservation standard we use in our domestic wildlife acts, such as the Endangered Species Act, we should be concerned with species, subspecies, and populations. If a single colony is a discrete population, then we should be concerned with preserving it. The trouble is, there's virtually no place in the Antarctic where there is exposed coastline where there are not resident populations of birds and seals, and if we apply this standard, we could not build *any* support facilities, including those for scientific activities like the ones that are already there." Environmentalists are skeptical of phrases filled with undefined terms, such as this one from the SCAR report: "Local effects would only be important if they significantly affect a unique local ecosystem." If there is any bias for development to proceed, this kind of language would make the "significance" of impacts subject to broad and self-serving interpretations.

Rational evaluation of environmental risk may also be hamstrung by the need to accommodate the various positions of claimant and nonclaimant nations. Even if a minerals regime proclaims sound environmental principles, politically expedient decision-making structures could sabotage their implementation. The 1980 Convention for the Conservation of Marine Living Resources (CCMLR), a regime regulating the harvest of Antarctic fish and krill that was negotiated in secret by Antarctic Treaty nations, has a novel "ecosystem standard" requiring that the effects of fishing on other species (notably endangered whales) be considered when setting quotas. But CCMLR's effectiveness may be limited by the need for consensus among treaty nations —including fishing states—for all substantive decisions, such as catch restrictions and research budgets. (A "count me out" clause permits any nation unhappy about a quota to declare that it simply will not comply.)

Meanwhile, the exclusivity of the Antarctic Treaty club and the inordinate secrecy surrounding its meetings has piqued many developing nations, who see Antarctica as "an area being grabbed up by developed countries who have the technology before [the developing nations] can get their fair share," according to Pat Scharlin, director of the Sierra Club's International Earthcare Center in New York City.

Many small nations would like to see the principle that the seabeds and oceans are "the common heritage of mankind"—as defined in the Law of the Sea Convention—extended to include Antarctica. Declaring that "the days when the rich nations of the world can take for themselves whatever territory and resources they have access to are over," Malaysia and Antigua and Barbuda succeeded in putting Antarctica on the United Nations General Assembly agenda in the fall of 1983. Forty nations debated the issue and called for a year-long U.N. study on all aspects of the Antarctic question. Antarctic Treaty nations have adamantly resisted attempts by the U.N. to meddle in Antarctic affairs, claiming that developing nations will have no interest in preserving the Antarctic environment. Some observers suspect the treaty nations of wanting to nail down a minerals framework quickly, before the U.N. has a chance to interfere. "If the lead time before development becomes commercially feasible is so long, why the urgent need to do a regime now?" asks Malaysia's U.N. ambassador, A. W. Omardin.

The treaty nations passed a resolution in 1977 that termed the establishment of a minerals regime "a matter of urgency." The resolution called for a policy of "voluntary restraint" on exploratory activities so long as significant progress on minerals negotiations was being made. According to R. Tucker Scully, head of the U.S. Antarctic delegation and director of the State Department's Office of Oceans and Polar Affairs, "The time has come for working out a system under which such activities can take place in a controlled fashion." The technology for serious exploratory drilling under Antarctic conditions now exists, Scully explains, and sooner or later someone will be unable to resist the temptation to poke a few holes in the continental shelf. If something valuable were found, a mad scramble would ensue, with dire environmental and political consequences.

But Jim Barnes, director of a Washington-

Photographed by Bruno J. Zanniski, New York City

Chilean geologists gather data on Deception Island, site of one of the two remaining active volcanoes in Antarctica. Chile maintains four scientific bases on the continent.

based organization called The Antarctica Project, thinks it highly unlikely that any country would risk antagonizing its Antarctic Treaty partners by initiating such wildcat exploration. Because the treaty nations do not even agree on whether Antarctica is closed to mineral activities until opened, or open until deliberately closed, Barnes says, "it could mean the end of the treaty if someone tried to go down there without a legitimate framework. But if they're really worried about people going down there and starting to develop, there's an easy way around that—one that environmentalists have been pushing for years: Make the voluntary-restraint policy a binding long-term moratorium."

The State Department's Scully dismisses the idea of a moratorium as unrealistic, calling it "an artificial avoidance of the issue, and quite an unstable thing if the results of continued scientific activities give a real smell of resources. There would be very strong pressures to move forward and develop, and a moratorium would break down." However, because research aimed at assessing resources is stepping up precisely *because* it appears likely a regime will be negotiated soon, Scully's prediction smacks of self-fulfilling prophecy, according to Barnes. By maintaining that only a minerals regime will prevent uncontrolled exploration, the treaty nations are promulgating the assumption that development is natural and inevitable while prevention of development is unnatural and ephemeral. They are also denying their own remarkable history of self-restraint in Antarctica for the sake of the common interest. Over the years, the treaty powers have come to several significant conservation agreements, including the setting aside of sites of special scientific interest and specially protected areas.

"The Antarctic Treaty powers have done a generally good job up to now in protecting the environment," says Roger Wilson, a British organizer of Greenpeace International. "But while they are concerned about preventing a disaster as they develop, they still want to develop. It's my contention that we're going to have to find another way to cope without oil sooner or later, and we should do that *before* we rip Antarctica apart rather than after."

In 1972, the U.S. was the only treaty nation to oppose the idea of a moratorium on minerals development. In 1975, New Zealand proposed the creation of a "world preserve" to be maintained under Antarctic Treaty auspices, offering to withdraw its territorial claim. Now, according to Scully, "there's no real disposition among any of the treaty nations to declare Antarctica's resources off-limits. One can argue that it's simply not in the cards, given the attitude of the participants."

Several mechanisms for saving Antarctica from commercialization have been put forth, such as a special protocol to the World Heritage Convention or use of the U.N.'s Man and the Biosphere program to declare the continent an "international biosphere reserve." If the minerals regime itself were to have extremely rigorous environmental standards, and if its regulatory committees were not biased toward development, the regime might be able to function as a framework for protection rather than exploitation. Conservationists are lobbying their respective governments to require public review of lease applications, for provisions that specially protected areas (such as a whale sanctuary) be set aside, and for observer status at meetings for nongovernmental organizations and interested nontreaty nations. Some conservationists are advocating the creation of an independent commission, with a full-time scientific staff, to oversee all projects affecting the Antarctic environment.

In 1977, Pat Scharlin of the Sierra Club's Earthcare Center was named to represent the concerns of the conservation community at that year's meeting of the treaty nations. Currently, 130 conservation organizations in 24 countries belong to the Antarctic and Southern Ocean Coalition, which monitors the preservation of the continent.

Wary of the pitfalls of commercial secrecy (which might curtail on-site inspection rights essential to the treaty's disarmament agreements), conservationists are also advocating a noncommercial, scientific approach to any oil exploration that does take place, with governments conducting drilling cooperatively and sharing results publicly. But, cautions Barnes, "we don't want them to forget that we think the best solution is to have no industrialization at all."

Delegates to the minerals meetings arrive with a primary mandate from their governments—"get the best possible deal for us"—and are not in a position to hinder access to resources without a groundswell of public support for this option. "If we're going to win, we have to have the same level of public awareness and action as the whale-hunting and seal-hunting issues," says Greenpeace's Wilson. "If we wait until industrial activities begin and then have to fight it with rearguard action, step by step, regulation by regulation, it will be much more difficult—and we'll be at that point in only a few years."

Ultimately, more is at stake in Antarctica than the fate of penguins and whales. Will the bottom of the world turn into a stage for international squabbling over who has dibs on a last frontier? Or can we take a bold, imaginative step in the direction of environmental prudence, debunking the myth that resource extraction must inexorably proceed until the Earth is wrung dry? Defining Antarctica's future will be a challenge—and an astonishing opportunity. □

Gale Warner is a Massachusetts-based environmentalist who has written for New Age *and the* Christian Science Monitor. *Her most recent contribution to* Sierra *was "Loma Prieta's Golden Anniversary" (September/October 1983).*

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GROUNDHOG DAYS

The Canoe Trip That Made a U-Turn

JUDITH GENDLIN

WE'VE BEEN CANOEING together since most of us were 12 or 13 years old. It started at a YMCA camp in Michigan, where we had a hardnosed Canadian hockey referee as a canoeing instructor. (We used to say he would be able to shoot rapids solo with only one arm.) I don't know whether it was his disciplinarian attitude or the challenge of the whitewater itself, but we city kids fell permanently in love with wilderness life in a canoe.

We went back to that camp summer after summer, until finally we were old enough to go on a two-week canoe trip in Canada. When we got too old for that, we came back to be leaders on those trips. Because only a few people got to lead those, though, we started having staff trips for people who just wanted to go.

There must be something unique about the way canoe trips bring people together, because there has been no end to the laughs we've had out there over the years. ("Remember when Claire stepped in the pancake batter?" "Yeah, and how about the time Donny spent the whole trip talking with a German accent?")

Although we don't go to summer camp anymore, a lot of us still live in the same neighborhood. We take it for granted that there will be a two- or three-week trip to Canada in late August, depending on who can get time off from work when. Planning usually begins in February, at the height of cabin fever, when there is nothing to do except go to the library to look at topographic maps and fantasize about whitewater.

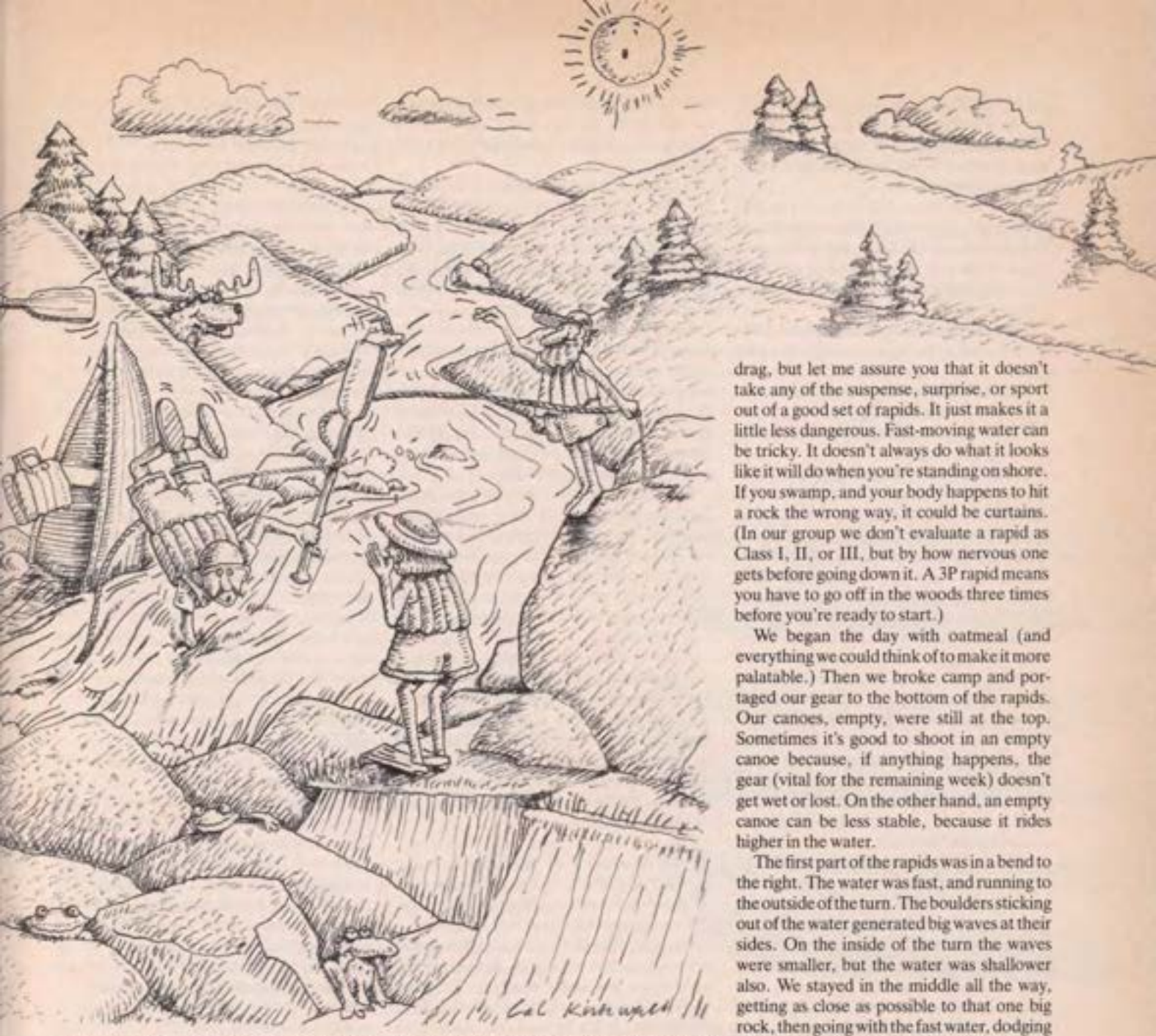
Just because you canoe with the same people every summer for 10 years doesn't mean you always know what they'll do next. Of course we all adhere to the same standards of safe conduct—wear a PFD (personal flotation device), stop to scout rapids, and so on—but what each person is likely to think about a particular set of rapids is entirely unpredictable.

In August 1981, six of us—Tommy, Jon, Neil, Mike, Laurie, and I—went canoeing north on the Groundhog River in northeastern Ontario. Tommy, Jon, and Neil had gone to Canada together as 13-year-olds and have been part of each other's lives ever since. Tommy makes creative dinners (consisting mostly of garlic), while Jon likes to lower himself by ropes into waterfalls. Neil talks with his hands both to people and to ducks. Mike, the giggliest person on the trip, has the ability to drink endless quantities of coffee. Laurie, a soccer player who was probably in the best shape of all of us, was an essential addition to the trip because she always had a good comeback to Tommy's sick jokes. As for me, I have a reputation for executing a good draw stroke when it's needed, but I also have been known to shoot rapids facing backward just because it seemed like the thing to do at the time.

After a few days of paddling we found ourselves getting back into the swing of things. We'd paddled across a pretty lake, and the river had begun with some easy chutes. The day I'm recalling here had been filled with blazing sunshine and short sets of rapids a few minutes apart. The scenery was a combination of aspens and evergreens and huge rocky cliffs. We were miles from roads and houses.

Toward the end of the afternoon we came to a set of rapids that our map showed to be more than a mile long. We could see only the top part of the set, and then the river went around a bend. From the top it looked pretty big—not something you could go down without careful calculation. A mile is a lot of rapids to deal with, and it was beginning to get dark. One side of the river was already in shadow.

We carried our gear along the portage trail to an acceptable camping spot. (Campsites



along portage trails are notoriously cramped, usually quite makeshift.) The trail ran along a ridgetop away from the river until the end of the rapids, so there was no way to get a preview except from right down there by the river. We were high up on a plateau, camped in a clearing full of blueberries, away from all sounds of the water. We prepared dinner and discussed our strategy for the next day.

Unlike the gung-ho heroes in movies, real canoeists do not just cry "Whoopie!" and plunge down rapids looking cool. Real canoeists scout first. They look at which section of the rapids has the most water flowing through it, because it's often easier to go where the water goes than to try to break off on their own. They also decide such things as which side of a particular rock to go around, how to take a turn and still end up where they want to be in the river, and which spots should be carefully avoided. Before real canoeists shoot a rapid they decide which side of the canoe each paddler will paddle on, so that if a quick turn is needed it can be done by drawing water in toward the canoe rather than by trying to push it away. Of course, a lot of the skill needed to shoot whitewater depends on instinct and consists of the ability to turn the canoe quickly—but scouting gives you an overall plan of where to go.

On a set of rapids a mile long, even if you could find some way to see it all beforehand, it would be hard to remember all the details. At least the first run down has to be done step by step, stopping when you can to scout what's ahead of you. This may sound like a drag, but let me assure you that it doesn't take any of the suspense, surprise, or sport out of a good set of rapids. It just makes it a little less dangerous. Fast-moving water can be tricky. It doesn't always do what it looks like it will do when you're standing on shore. If you swamp, and your body happens to hit a rock the wrong way, it could be curtains. (In our group we don't evaluate a rapid as Class I, II, or III, but by how nervous one gets before going down it. A 3P rapid means you have to go off in the woods three times before you're ready to start.)

We began the day with oatmeal (and everything we could think of to make it more palatable.) Then we broke camp and portaged our gear to the bottom of the rapids. Our canoes, empty, were still at the top. Sometimes it's good to shoot in an empty canoe because, if anything happens, the gear (vital for the remaining week) doesn't get wet or lost. On the other hand, an empty canoe can be less stable, because it rides higher in the water.

The first part of the rapids was in a bend to the right. The water was fast, and running to the outside of the turn. The boulders sticking out of the water generated big waves at their sides. On the inside of the turn the waves were smaller, but the water was shallower also. We stayed in the middle all the way, getting as close as possible to that one big rock, then going with the fast water, dodging the small rocks at the bottom. We made it through with no problems, and pulled over to the right immediately afterward to scout.

There was a slight drop ahead at a spot all the way across the river, where the water poured off one shelf onto another. At the center of the river the shelf's edge had a gouge in it, and a lot of water rushed down this in a kind of ramp. We all went down this at the point where the water was deepest, then pulled over to the right to see what was coming up next.

The river was banked by dark stone cliffs. The approach to the next chute was full of large boulders. The water charging over them was choppy, and there were a lot of standing waves at weird angles. The river was narrowing, so there was more water with more force in a smaller area. At the

Illustrations by Kirk Caldwell

center of the river was a huge, angular rock, and then a three-foot drop into a turbulent, frothing pool. The walls were built of solid rock. The river curved again, and that was as far as we could see.

So we stood there, the six of us. The roar of the water bounced off the rock walls and clogged our ears. We had to yell to hear each other. Talk was going on as if we were actually going to go down this treacherous stretch of water:

"We could paddle down the right and then cut to the left of the big rock and go down the chute."

"If you hit that drop at any kind of an angle, you'll be swimming!"

"You could make it, but what about avoiding that jagged rock?"

I didn't take the discussion seriously, because Tommy is forever pondering the possibilities of something impossible. This chute was just at the limit of what a canoeist could even consider going down. That means that there are chutes that theoretically are "shootable," but no one ever takes the risk of proving they can be done.

The next thing I knew, Neil and Tommy were walking back up to the top, discussing how they were going to do it—with Tommy in the stern and Neil in the bow midship compartment to keep the weight farther back and let the bow ride higher. What about the choppy waves at the top? What about hitting that drop straight-on? Neil, who'd been concentrating hard on the water, came over to me and said, "You don't think we should do this, do you?"

"No, I really don't think you should go down it," I told him. "I'm not just gonna tell you what I think, I'm gonna tell you: *Don't go down it!*" So much for my say in things.

Meanwhile, Mike, big-guy in residence, was standing there smiling and asking me how I thought we should go about it after Neil and Tommy finished. Laurie, looking scared, said she thought they were crazy to try this. I was relieved to hear Jon say that he wasn't sure he was going to go down even if they made it.

Jon positioned himself on a rock above the big drop, a rescue line (a lifejacket tied to a coiled rope) in hand. He threw it into the water a couple of times to get a feel for the distance and for the strength of the current. Laurie stood on shore to act as a marker for a submerged rock that was out in the middle. ("When you get to Laurie, cut right.") Neil and Tommy climbed into the canoe and pushed off.

Right away they began tossing around in the choppiness and taking in water from the waves. They never tipped over; they just started to fill up. The canoe was very hard to control. When it wobbled suddenly, Neil fell out, to the side away from us. Tommy saw this and dove out, toward our side. I reached for him as the current swept him by, but missed. He grabbed a rock farther down and got out.

Neil was being swept down the middle of the river, headed straight for that jagged rock. The canoe was right behind him. Jon threw the lifeline, and I couldn't believe my eyes when Neil didn't grab it. (Jon said later that he felt awful because he thought he'd missed.)

Neil bypassed the big rock, went over the chute into the pool and then went under. My knees were about to cave in. Then he popped back up, grabbed his precious black hat, swam over and got out. He said later that he hadn't wanted to grab the lifeline because he thought he'd get smashed between the canoe and the rock.

The canoe went over the chute and then, like something out of *Jaws*, submerged nose-first, perfectly vertical, until it was totally gone from sight. (That pool was deep!) Then it popped back up and floated on.

You could certainly say that this chute answered our questions about what is or is not "shootable."

After we made sure everyone was okay—and Neil and Tommy had assured us they were warm enough—some of us climbed up over the steep rocks on the inside of the curve and went to get the canoe. The rest of us lined the other two canoes down to the three-foot drop and then hand-over-handed them up over the rocks and down to the river on the other side.

It's probably just superstition on my part, but after someone swamps I don't like to get right back in and shoot rapids. I like to calm down and get my wits back . . . let my adrenalin settle a bit. But there were other things influencing us. For one thing, we'd spent the whole morning discussing ways to do each chute, and we were all a little restless and ready to move on. Also, after staring at the big chute, the last part of the set looked positively docile.

Jon, Neil, and Laurie were portaging canoes and paddles to the bottom of the rapids, and Mike, Tommy, and I had just gotten the third canoe past the big chute. Mike, who had been my bowman earlier that day, said to me, "Can't we shoot this?" I said I didn't want to, but didn't try to explain my reasons.

Considering how I felt, I think now how Tommy must have been feeling. He'd been in the cold water, swimming hard to get away from the big chute; he'd been scared, and he felt bad about having put everyone through this. Tommy doesn't have a lot of insulation on his body, and when he gets cold a voice goes off in his head that says "Aw, forget all this—let's shoot and get out of here." So he and Mike got in the canoe and started down the last part of the rapids without scouting at all, Tommy sterning with less than all of his mind concentrated on the water. Halfway down this relatively easy stretch they hit a rock and went over. They came through that okay, and even managed to grab their paddles, but the canoe turned broadside against the rock, facing upstream, with all of the river rushing into it.

From there it would not budge. Neil and Jon swam out to try to move it. At one end of the canoe the water was over their heads. The lower gunwale was wedged against a submerged rock, and it was hard to get any leverage. Everyone came back on shore, and we stopped to talk strategy. (We must have eaten lunch too, but not every peanut-butter-and-jelly sandwich is memorable.) Mike, who is also a rock climber, had brought ropes and carabiners and such. He suggested we try a "block and tackle," an arrangement that allows you to pull on a rope so that any gain you make is secured by a knot in another rope. We tied one end of the rope winch to the canoe and tried this one-sided tug of war, but the river won. We couldn't move the canoe. We paddled across the river and tried again from the other side, but we still couldn't move that canoe.

We spent that night at the same blueberry-covered campsite. Over lentil soup we tried to act cheerful about the fact that one of our canoes was now a part of the landscape. No one was ready to give up yet.

The next morning we cut down four or five big saplings. Jon, Neil, and Tommy got into the river upstream of the canoe and swam down to it. Mike swam out to a big rock upstream of the canoe, and Laurie and I passed the saplings to him. He'd lost one of his running shoes, so he was wading around in the river in his immense (size 13) hiking boots. He passed the saplings to the guys on the canoe and then swam down himself.

The more they pried, the more the canoe molded itself to the rock. The four of them picked their way out of the river rock by rock. We had a depressing lunch of salami and crackers, until Mike stepped on the plastic squeeze bottle of mustard and made yellow fireworks all over the rocks. We howled with laughter. It was time to face facts: We had six people, a lot of gear, and only two canoes. We'd have to go back.

Over the next few days we lined and walked our two well-loaded canoes up the rapids. It wasn't a lot of fun, but with a group of people like ours the atmosphere doesn't stay funereal for long. Even if you lose a canoe, you can still have a good time. What happens among people is really what makes or breaks a trip. □

Judith Gendlin is leading canoe trips this summer for a YMCA camp in Minnesota.

Beyond the Birchbark Canoe

BOB WOODWARD

Ask most people to describe a canoe, and they will invariably hold up the birchbark canoe as their model—despite the fact that canoes have changed tremendously in recent years. Designs are different and materials stronger.

"The upswept-ended 'Indian' canoe was necessitated by the materials the Indians used and the way in which they constructed their canoes," says Peter McMullen of Mad River Canoes. "However, certain tribes, such as the Malacites of New England, recognized long ago that the high-profile bow and stern sections acted like sails in a strong wind, making the canoe difficult to maneuver." McMullen credits the Malacites with starting the modern trend toward lower profiles for bow and stern.

One thing the Malacites didn't do was take their canoeing sitting down—they kneeled. Not so the modern canoeist. "Today's canoes are built with more comfort in mind," says Harry Roberts of Sawyer Canoe. "Now a paddler can control the boat while sitting in a shaped seat and pressing his or her feet against braces to get the most out of each paddle stroke."

There are three types of modern canoes: general recreation, whitewater, and flatwater cruising. Each has its own distinctive design characteristics.

A general-recreation canoe will have a small amount of rocker, which is the curve in the keel from bow to stern. Thanks to its modest rocker, a recreation canoe will turn relatively easily; it will also be "beamy" (broad) to increase its stability. Length varies from 16 to 17 feet, and depth ranges from 13 to 15 inches.

A whitewater canoe will have more rocker than a general recreation canoe, for faster turning ability. It will also be a little less beamy, with a larger-volume bow and stern to plow through standing waves. It will be 14 to 15 inches deep and 15 to 17 feet long.

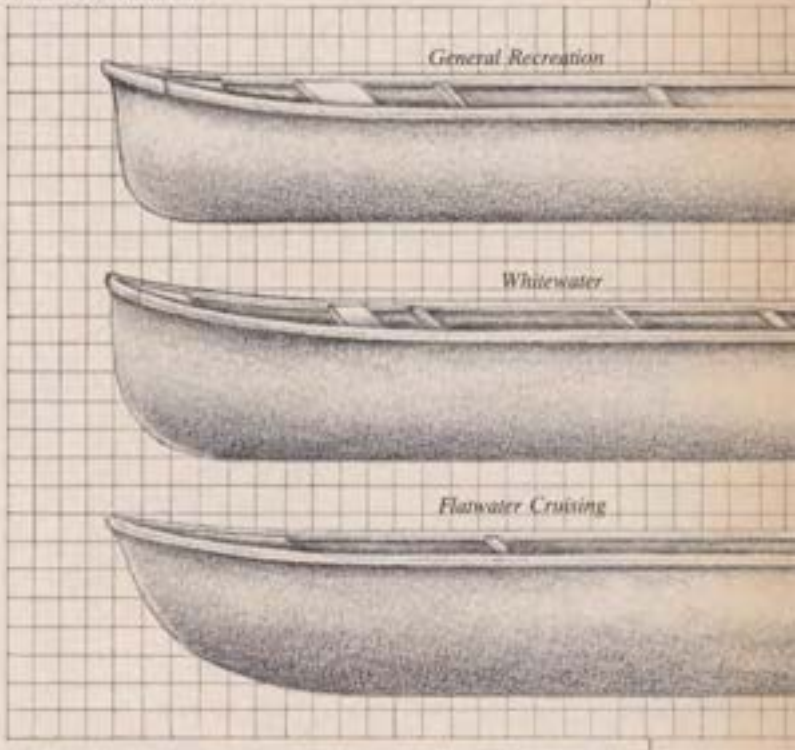
A typical flatwater cruising canoe has a far more streamlined profile, with no rocker, a narrow and low bow and stern, and even less beam. It will also be shallower (12 to 14 inches) and longer (15 to 18 feet).

Construction materials have kept pace with design developments; as a consequence, modern-day *voyageurs* can choose from a number of synthetic materials in addition to the more familiar fiberglass and aluminum. Those old standbys are still available, though. Aluminum and what's called "mat and roving" fiberglass construction cost between $500 and $600. The lighter and more flexible multilaminate fiberglass canoes cost from $600 to $900. Aluminum canoes weigh between 60 and 80 pounds; fiberglass ones, between 50 and 70 pounds. A careful shopper can often find a good used aluminum or fiberglass canoe for a remarkably low price—definitely something for the first-time canoe buyer to consider.

Newer construction techniques make use of synthetics such as polyethelene, Royalex, and Kevlar. Of the three, polyethelene is the least expensive (less than $500) and the heaviest—in fact, polyethelene canoes are among the heaviest on the market. Royalex, a popular material in so-called "indestructible" canoes, is composed of vinyl sandwiched around layers of ABS plastic laminate and an ABS foam core. Royalex canoes weigh between 70 and 80 pounds and range in cost from $750 to $900.

The premier canoe-building material is Kevlar, an aramid fiber most commonly used in tires, skis, and bulletproof vests. It is used exclusively in high-performance canoes. A typical 17-foot Kevlar touring canoe might weigh 40 to 50 pounds and cost between $1,000 and $1,400.

What should you look for when you buy a canoe? Peter McMullen suggests you first give careful consideration to the type of canoeing you will do. If you're a birdwatcher, hunter, or casual flatwater paddler, look for a stable hull design and long-lasting materials. If you plan to paddle whitewater, don't buy anything but that type of canoe. Traveling exclusively on calm water? Get a cruiser.



Harry Roberts points to workmanship as the next important criterion: "The workmanship should be apparent; there should be no visible flaws." Next, check the seats. Are they comfortable? Are the foot braces adjustable? Is the canoe easy to lift? And it's always a good idea to water-test a canoe before you buy it.

Most canoes sold in North America are multipurpose 16- to 18-foot recreational models. There is, however, a growing trend toward light, high-performance touring boats—sort of the sporty luxury sedans of the recreational class. There's also a trend toward solo (or, as Roberts calls them, "personal") canoes. "If anything," Roberts notes, "people are discovering that canoes can be more than just cumbersome floating platforms. The newer models are versatile craft that are a joy to maneuver through calm or wild water."

Bob Woodward writes frequently for Sierra *on outdoor equipment. His "Trends in Cross-Country Ski Gear" appeared in the January/February 1984 issue.*

DRIED & TRUE

The Lowdown on Lightweight Foods

Freeze-dried, spray-dried, or vacuum-dried? Aluminum, plastic, or polypropylene? Wee-Pak, small pack, or six-pack? Every hiker has experienced the utter bewilderment of standing before an array of backpacking foods and trying to choose among them. The products all blend together, a jumble of colors, shapes, and sizes.

LOIS SNEDDEN

Not all commercially prepared lightweight foods are the same, however. There's a world of difference in price and content, for example, between "beef Stroganoff with noodles" and "Stroganoff sauce with beef and noodles," or between "chicken/vegetable stew" and "vegetable stew with chicken." One package will instruct you to add boiling water, while the contents of another will require some cooking. To select the items best suited to your palate, your nutritional needs, and your pocketbook, four things need to be considered: dehydrating methods, ingredient combinations, label information, and meal preparation.

First, let's examine the methods commonly used to dehydrate foods: conventional heat, vacuum-drying, freeze-drying, and spray-drying. Each of these has its particular effect on a foodstuff's taste, texture, cost, and preparation time.

When a food product is to be dried by *conventional heat*, it is placed on a conveyor belt and run through an oven. This technique—the oldest and most common food-drying procedure—removes between 80 and 90 percent of the moisture from the foodstuff. Such everyday staples as noodles, rice, and onions are best dried in this manner because other methods increase cost without a corresponding improvement in flavor retention.

Another method, *vacuum-drying*, helps such fruits as peaches, apricots, and apples retain their texture and flavor when cooked. The product is placed in a heated vacuum chamber, where 96 percent of its moisture is removed. Vacuum-dried fruits cost more than those dried conventionally, and they'll be crisp rather than soft when eaten uncooked. By choosing these, however, you eliminate considerable bulk and weight from your pack.

Freeze-drying, many campers testify, is the technique that produces the tastiest meats and vegetables, while allowing you to carry along such delicacies as strawberries and blueberries (albeit carefully, for these fruits are *very* fragile). The product is frozen rapidly, then subjected to a vacuum chamber and low heat. This causes the water that has been frozen within the food to be transformed directly from a solid to a gas, much as dry ice is transformed at room temperature. Because the water is drawn from the product as a gas while the solid components remain in place, the food retains its original shape, color, and bulk. The pores that remain are easily penetrated when water is added during soaking or cooking. Because freeze-drying requires an additional step and more equipment than other dehydration methods, it is the most expensive of them all. On the other hand, freeze-dried foods weigh very little indeed—an important consideration when you want to avoid packing a load meant for a Sherpa.

Spray-drying is used to dehydrate liquid products. Liquid is sprayed as a fine mist into a heated chamber, where it is dried into small particles and then collected. This is the only way milk can be dried. Eggs, on the

Photography by Ed Caldwell

other hand, can either be processed this way or freeze-dried. While they are less expensive than freeze-dried eggs, spray-dried eggs do not taste as good. They are best when used in a recipe calling for a small amount of egg in addition to other ingredients.

The cost of each food item is determined in large part by the method used to dry its various ingredients. Thus, prepared meals sell for different prices in proportion to the nature of the dried items they contain. You can save money by using conventionally dried brown rice, lentils, or macaroni as the foundation of your camp meals, adding your own spices and freeze-dried meat and vegetables for the variety and nutritional contribution they offer. However, unless you take special delight in experimenting with your own culinary creations, you'll appreciate the array of choices available in your outing store or supermarket.

All of the commercially prepared food products we're considering here are made up of a number of ingredients that have been dried in various ways. While each producer of lightweight foods develops its own recipes, most food-packing firms do not dry their own ingredients, but rely instead on a limited number of suppliers. For example, a few companies supply meat to virtually all the packaged-food firms that include meat-based meals in their product lines. Likewise, for many years applesauce was produced by only one company, then sold in bulk to the various producers and distributors of lightweight foods. One would find it repackaged under various labels and sold at different prices, even though the product was identical. (Unfortunately, a magazine that taste-tested applesauce a few years ago was unaware of this fact.)

For the most part, though, prepackaged backpacking foods differ enormously. You may enjoy certain combinations of ingredients, for instance, and wish to avoid others. A vegetarian meal may be your choice. Or if you want meat in your diet, you'll want to know how much you're getting in each portion.

By reading labels, you can make these choices. As with canned and frozen foods, ingredients are listed in descending order, with the most prevalent one first. Although most companies will list the key ingredients in their products (preservatives will be listed in any case), all the contents need not be specified. For example, "Stroganoff sauce" may be mentioned without an inventory of what went into its preparation.

When meat products are used, companies preparing lightweight backpacking foods must conform to standards set by the U.S. Department of Agriculture (USDA) in the same way other food producers must. Whether a lightweight meal is itself freeze-dried or contains items dried in several ways, certain standards must be met. Dried meat and poultry (though not fish products) must always be packaged under inspection, following which the USDA seal is affixed to the package. You'll have a better idea of what you're buying if you have some understanding of what those regulations require, particularly if you are concerned about the quantity of meat present.

The name given a product is your guide. "Chicken stew with vegetables," for example, must contain a minimum of 12 percent chicken based on the cooked weight of the package contents. On the other hand "vegetable stew with chicken" need contain only 6 percent chicken by weight. With products that are basically meat the difference is much more pronounced. While "beef Stroganoff" must contain 30 percent beef on a cooked basis (or 45 percent beef on a fresh-meat basis), "Stroganoff sauce with meat" need use only 6 percent meat on a fresh-meat basis. (This rule holds for any "sauce with meat" combination.) According to USDA Inspector Floyd Mintun, this translates to a maximum of 2 percent on a cooked-meat basis—it could be less than that, depending on the meat. These are minimum requirements, however, and I've found that several companies customarily include more meat. For example, according to Mintun, Wee-Pak's beef Stroganoff contains 45 percent beef on a cooked basis—50 percent more than is required. Keep in mind that these protein sources are the most expensive items to freeze-dry, and they affect the cost of the end product in proportion to their use.

Some companies, such as Dri-Lite, purchase meat from their suppliers in prescribed amounts—the USDA seal already affixed—ready to be inserted into the larger meal package. In cases like this, an on-site inspection by the relevant state department of health verifies the firm's standards of cleanliness and the accuracy of its weights and measures.

Other companies purchase meat in bulk. They then either add it to meals during packaging (the Wee-Pak way), or they combine the meat with all the other ingredients and then cook, freeze-dry, and package the full entree (as does Mountain House). In this case, although the meat has already been inspected and the seal affixed, it must be inspected once again because the original packaging has been opened. When meat has been mixed with other ingredients in one package, the USDA seal must appear on the outer package. But the USDA seal is not needed on the outside of the package if the meal contains a separate meat packet that has been stamped at an earlier stage.

Belinda Sanda, sales manager at Dri-Lite, says "the customer should carefully read the label, because the label says it all."

RichMoor's Sy Plutzer agrees. "Everybody should read labels. It's hellishly important. The worst thing is being in the backcountry and finding out that your meal contains ingredients you don't like or you're allergic to." (At least one company—AlpineAire—markets its products in transparent pouches that permit the buyer to see every ingredient clearly.)

Ken Fontecilla, creator of Wee-Pak, also urges consumers to study labels. "The label helps you determine the size of the final individual serving and just what is in the meal. In comparing meals with similar yields, you need to consider the value you're getting for your money. Be sure to compare the net weights of each package. For similar 12-ounce servings, all else being equal, more food value is obtained from a package containing more net ounces (6.5 versus 5.2, for example). The difference will stem from the water you add during preparation."

Although drying methods affect both taste and weight, they have little effect on nutrition. Drying is a good way of preserving food. According to George York of the University of California at Davis, "freeze-drying causes the least amount of damage to the structure of a foodstuff. The major thing to remember is that damage is caused by oxygenation—so packaging is important.

"Contrary to what most people think, foods that undergo any sort of processing lose only a fraction of their vitamin content. In considering vitamin B-1 (thiamin), for example, there's not much point in being concerned with how much of it vegetables lose, because there isn't much to lose in the first place. Meat has lots of B-1 though, so losing 15 percent is not terribly critical. Sun-dried apricots, if properly sulfured, lose only 10 percent of their Vitamin C and 5 percent of their Vitamin A." Protein, calcium, and starch are not adversely affected by the drying process.

Drying methods do affect both taste and weight, however. In addition, the way in which ingredients are combined and the cooking time required are integral to the quality of the meal you finally eat. Food items rehydrate or cook at varying rates. But when they are mixed in a single pouch, everything cooks for the same amount of time. If the producer has not made every effort to combine ingredients that require equal cooking times, or if you don't follow instructions, the result may be either an under-rehydrated meal or one with the consistency of baby food.

Some meals require only the addition of boiling water (and time) to rehydrate. The

Spot illustrations by Meryl Schumacher

ingredients in such a meal are precooked and then freeze-dried. Because some of these ingredients go through a process that is more expensive than usual (for example, noodles or rice are cheaper if dried conventionally, not freeze-dried), the meal is more costly. If you cook the meal yourself, combining products separately according to the drying method used for each item, you save money. No matter what you do, though, you won't be able to serve an "add-water" meal piping hot. Additionally, because meats rehydrate at a slower rate, you will sometimes find yourself chewing on crunchy or flaky meat. There are times, though, when the tradeoff in ease of preparation is worth these drawbacks.

Meals that require you to add ingredients at intervals help solve this problem and, remarkably enough, add only minutes to preparation time. Another solution is to cook the main part of the meal in one pot and the carbohydrate in another, serving one over the other. Meatballs and sauce over spaghetti and curried beef over rice are always improved by this treatment. If eating is an important part of your day (as it is of mine), you'll find the few extra minutes of effort well worth it.

There are some further steps you can take. When the directions call for presoaking, flavor can be enhanced by starting the process as soon as you arrive in camp. When an ingredient or a one-pot meal requires 15 minutes or more cooking time, you can bring the item to a boil, simmer it for several minutes, and remove it from the stove, allowing the product to absorb the water naturally. When you are ready to cook, adjust water and cooking time accordingly. However, don't try this with macaroni products. Egg noodles in particular tend to disintegrate rapidly even when not precooked.

The same process works well when preparing potatoes or whole grains for breakfast. But start the simmer/soak routine the night before. Be sure to add plenty of water —especially to grains, as they absorb several times their volume in liquid. Potatoes will need additional cooking, but your cereal, as a general rule, will need only more water and heating to be ready to eat. Not only does this conserve fuel, but it speeds your morning departure. (If you're camped in an area frequented by bears, you won't want to leave soaking foods out overnight! You can foil the efforts of smaller creatures by weighting the pot with rocks.)

Most food producers use spices sparingly to accommodate a range of tastes. AlpineAire's well-spiced meatless meals are an exception, and other firms are finally offering products with more seasoning. However, you can add interest to and improve the flavor of most other meals by carrying a selection of herbs, spices, and condiments with you, adding them to suit your own taste. I generally carry a limited assortment (in film cannisters) to fit the meals I've planned. Besides salt and pepper, I might have curry powder, *fines herbes* or Italian herbs, garlic powder, Parmesan cheese, and a mixture of cinnamon, nutmeg, and allspice. Unless there are only two of you, and you agree on flavorings, it's safer to let each person add herbs and spices individually. (On one trip, I ceased appreciating dinner when, for nine days, onions dominated everything from chicken soup to shrimp creole.)

You can be confident of your backpacking menus if you pay attention when it counts—at the time of purchase. Whether you invent your own combinations or select ready-made meals from that outing store's vast array, you need to follow basic ground rules. Remember, lightweight foods are *not* created equal. Read the labels! That way you can determine how products are dried and processed. You can see what ingredients a meal contains. You can balance flavor, nutrition, and value. And—later—you'll enjoy contented smiles around the old camp stove. □

Lois Snedden, of Reno, Nev., has led Sierra Club knapsack trips in the Rockies and Sierra Nevada.

A Tour of This Summer's Trail Guides

JONATHAN F. KING

This summer brings a wealth of new trail guides to bookstore shelves. Still other guides, once useful and accurate but since rendered unreliable by changing circumstances and conditions, have been revised and updated. Following are brief descriptions of just a few of the many worthwhile trail guides we've seen so far this year.

One note: Usually a publisher will have more than one trail guide in its inventory; a number of companies concentrate exclusively on the genre. A note to each publisher will bring you a complete catalog of new releases and backlisted titles. You'll find yourself able to map out a full summer's hiking (or strolling, as John Muir would prefer) before you set foot out the door.

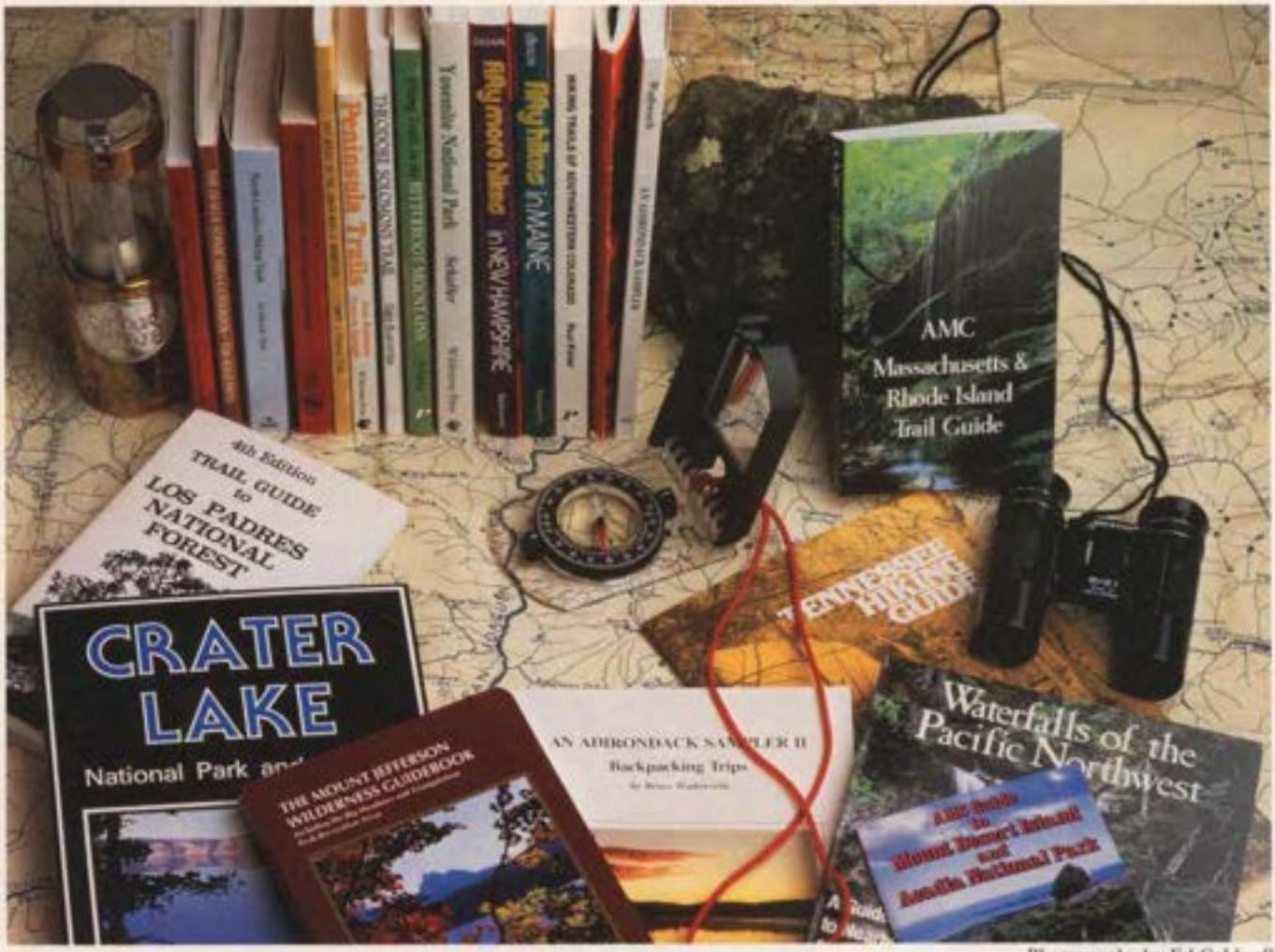
SIERRA CLUB PUBLICATIONS

A number of Sierra Club chapters and groups have assembled their own trail guides over the years.

A fourth edition of the Ventana Chapter's *Trail Guide to Los Padres National Forest (Monterey Division)* may be had by writing to "Trail Guide," c/o Sierra Club Environmental Center, Box 5667, Carmel, CA 93921. The cost is $5.25 to Club members and $6.75 to nonmembers; a $1 shipping charge should be included in either case. The guide describes nearly 70 trails in this rugged mountain area, which extends south from the Carmel Valley to northern San Luis Obispo County near San Simeon.

The Santa Lucia Chapter has published a revised edition of its *San Luis Obispo County Trail Guide*, featuring virtual step-by-step descriptions of 25 trails in the mid-coastal region of California. Send a check for $3.95 (plus tax for California residents) payable to Sierra Club Trail Guide, to ECOSLO, 985 Palm St., San Luis Obispo, CA 93401.

The Angeles Chapter's Santa Monica



Photography by Ed Caldwell

Mountains Task Force has assembled a guide titled *Day Walks in the Santa Monica Mountains*. Fifty-three hikes of varying lengths are covered, concentrated for the most part in the coastal segments of the 52-mile range. Send your check for $3.50 (plus $1 for handling), payable to Santa Monica Mountains Fund, to 6206 Aura Ave., Reseda, CA 91355.

Members of the Club's Tennessee Chapter researched the trails included in the *Tennessee Hiking Guide* edited by Robert S. Brandt (a chapter outings chair) and published by the University of Tennessee Press. For your copy, send $2 (plus 50¢ postage) to Robert Brandt, 700 Woodleigh Drive, Nashville, TN 37215.

Sierra Club Books (P.O. Box 3886, Rincon Annex, San Francisco, CA 94119) publishes numerous titles of interest to hikers. The 20-volume Totebook series includes paperbound trail guides to a variety of natural areas around the nation, from the North Cascades ($9.95; $7.95 for Club members) down to the "Bigfoot country" of northern California and southern Oregon ($8.95; $7.05); from the deserts of the Great Basin ($9.95; $7.95) to the Teton ($5.95; $4.75) and Yellowstone ($8.95; $7.05) backcountries; from the Smokies ($8.95; $7.05) to—most recently—Virginia (*Hiking the Old Dominion*, by Allen de Hart: $8.95; $7.05).

Finally, a guide not published by any Sierra Club entity that should nonetheless be of interest to Club members is *A Hiking Guide to the Theodore Solomons Trail*, by Gary Buscombe (High Adventure Press, 957 Micheltorena, Los Angeles, CA 90026; $5). The 290-mile Solomons Trail—named for the explorer, photographer, and charter member of the Sierra Club who discovered and named numerous landmark features of the Sierra Nevada—runs between Glacier Point in Yosemite Park and Cottonwood Basin, south of Mt. Whitney. This little-known alternative to the Pacific Crest and John Muir trails was virtually uncharted until the publication of this 125-page paperback guide.

THE SAN FRANCISCO BAY AREA

The natural diversity of the San Francisco Bay Area is a constant delight to its residents and visitors. The region could fairly be called "everyone's favorite urban wilderness." One book in particular succeeds in encapsulating the varied ecosystems and miles of trails that surround the bay: *An Outdoor Guide to the San Francisco Bay Area*, by Dorothy L. Whitnah (Wilderness Press, 2440 Bancroft Way, Berkeley, CA 94704; $9.95). The 1984 edition represents a massive revision undertaken by Whitnah in the wake of the wild winters of 1982 and 1983, which damaged, eliminated, or caused

to be rerouted a number of Bay Area trails.

Anyone wishing to hike the peninsula that extends below San Francisco to the redwood-studded coastal slopes above Monterey Bay will find detailed route descriptions in another Wilderness Press title, *Peninsula Trails*, by Jean Rusmore and Frances Spangle ($9.95). More than 200 miles of trail through 20,000 acres of public lands are described, accompanied by maps, photos, natural history, and complete information on access by car, bike, and public transportation. Visitors to the Santa Clara Valley will find descriptions of near-wilderness preserves in the vicinity of the San Jose megalopolis in a brand-new Wilderness Press title by the same authors, *South Bay Trails* ($9.95). Include 75¢ with your order to cover postage and handling.

The Midpeninsula Open Space District, established by the voters of northwestern Santa Clara and southern San Mateo counties, has in recent years acquired and preserved thousands of acres of Bay Area parkland in the area covered by *Peninsula Trails*. By writing to the district (375 Distel Circle, Suite D-1, Los Altos, CA 94022) you may receive its all-site map and a copy of its seasonal publication, *Openspace*. Trail maps and topos of specific units within the system are also available on request.

Across San Francisco Bay, the East Bay Regional Parks District performs a function similar to that of the Midpeninsula Open Space District, although it is far older, having just celebrated its 50th anniversary. A packet of trail maps and descriptive folders for all its units, encompassing 58,000 acres of ridgetop, valley, and bayside lands, may be had by sending $1 to the EBRPD's Development and Public Information Department (11500 Skyline Blvd., Oakland, CA 94619).

THE NORTHWEST

Robert L. Wood has tramped Washington's Olympic Peninsula for 35 years, and his expertise informs every page of the *Olympic Mountains Trail Guide* ($8.95) published by The Mountaineers (715 Pike St., Seattle, WA 98101). The publishers assert that this is the only comprehensive guide to all the trails in the Olympics—including both the park and the national forest—and that certainly seems a believable claim, judging from the painstaking efforts Wood exerted in preparing the book. (He says he walked each trail personally—not an uncommon regimen for a trail-guide author to follow—and that he walked many of them from end to end in both directions!) More than 150 routes within virtually every region of the peninsula are described. Trail descriptions include elevations and distance from the trailhead of significant features and junctures.

A new title from The Writing Works (P.O. Box 24947, Seattle, WA 98124) will surely prove popular with visitors to the Olympics, Mt. Rainier, the Columbia River Gorge, Oregon's Cascades, the Snake River Plain of southern Idaho, and other scenic areas of the Northwest. *Waterfalls of the Pacific Northwest*, by Gregory A. Plumb ($9.95), rates nearly 500 falls on a five-star scale, with five stars indicating an "awe-inspiring experience." Extremely clear road and trail descriptions are provided for each fall, along with a smattering of geological information. Location maps are included as well.

Not in wide distribution but worth seeking out are two Oregon guides published by The Solo Press (1665 A Street NE, Salem, OR 97301). *The Mount Jefferson Wilderness Guidebook* ($11.95) and *The Olallie Scenic Area Guidebook* ($7.95), both by Tony George, are pocket-size guides that include some features other guidebooks would do well to incorporate: graphs that illustrate peak-use patterns by month within subdivisions of the title areas, plus tables organized by trail name and number that detail the elevation gain or loss, the high or low points, and the average and maximum gradients of each. Numerous large-scale map sections complete each package.

THE ROCKIES

The outdoor guides produced by the Pruett Publishing Company (2928 Pearl St., Boulder, CO 80301) cover Colorado in minute detail. In addition, some of their titles venture as far afield as Wyoming, Montana, and Idaho.

Hiking Trails of Central Colorado, by Bob Martin ($7.95), details 55 hikes in three mountain ranges: the Sawatch, Mosquito, and Elk. Twenty-six of Colorado's 54 summits over 14,000 feet are included in these three ranges. From the relatively easy walking of the Mosquito Range's high country to the occasionally technical challenges of the Elk Range's highest peaks, there are routes here to meet the needs of both the casual dayhiker and the dedicated backpacker. Good-quality enlargements of topographical map sections preface the description of each hike.

Hiking Trails of Southwestern Colorado, by Paul Pixler ($5.95), describes some 50 hikes in the San Juan and Uncompahgre national forests. Whether you prefer the casual 1½-hour stroll to Four Base Lake that begins 20 minutes out of Durango or the challenge of the difficult route up Grizzly Peak, you'll appreciate the variety of hikes this book includes.

THE EAST

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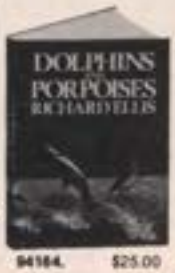

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ADK, the Adirondack Mountain Club (172 Ridge St., Glen Falls, NY 12801). While the ADK publishes volumes devoted to the general and natural history of the region, it is particularly well-known for its trail guides and maps.

This year marks the 50th anniversary of the first edition of the ADK's *Guide to Adirondack Trails*, and the club celebrates that milestone with a revised 10th edition ($9.95 nonmembers, $7.95 members). Detailed trail descriptions that refer to a comprehensive topographical map (included with the guide) direct hikers through the High Peaks Region of the range—an area that includes 46 mountains above 4,000 feet within a 12,000-square-mile area. The 6 million acres of the park are within a day's drive of some 55 million people; yet nearly 400 miles of hiking trails within a 180,000-acre roadless area offer access to solitude to those eager to leave the campgrounds and visitor centers behind.

Dayhikers in the Adirondacks can choose from among 50 hikes described by Bruce Wadsworth in the first volume of his *An Adirondack Sampler* series, subtitled "Day Hikes for All Seasons" ($5.95; $4.75). Queer Lake and Vanderwhacker Mountain are just two of the sites reachable during a day's casual stroll. Wadsworth's second volume covers backpacking routes outside the High Peaks Region of the park.

Other trail guides published by ADK include *Guide to the Eastern Adirondacks: Lake George, Pharoah Lake, and Beyond*, by Barbara McMartin ($8.95; $7.15); *Guide to Trails of the West-Central Adirondacks*, by Robert J. Redington ($9.95; $8); and *Guide to the Northville-Placid Trail* ($5; $4). Enclose $2 with your order to cover shipping and handling.

Brand new from the Appalachian Mountain Club (5 Joy St., Boston, MA 02108), the nation's oldest nonprofit conservation organization, is a pocket-size *Guide to Mount Desert Island and Acadia National Park* ($3.50), which includes a trail map in its back-cover pocket. In the same format, but heftier at 164 pages, is the third edition of the *AMC Guide to Mount Washington and the Presidential Range*, covering nearly every trail in the 14-mile range that lies at the heart of the White Mountains. (The *AMC White Mountain Guide*, now in its 23rd edition, is the definitive guidebook for the region as a whole; the trail descriptions in the Mount Washington guide are excerpted from that edition.)

Other recent titles from the AMC include *North Carolina Hiking Trails*, by Allen de Hart ($10.95), and *AMC Massachusetts & Rhode Island Trail Guide* ($10.95). An *AMC Maine Mountain Guide* will be published this fall. Finally, two titles will be added to the AMC's popular "Country Walks" series this year: *Country Walks Near Washington* and *More Country Walks Near Boston*. In addition to the first Boston title, books already in print cover walking routes close to Philadelphia, Baltimore, Montreal (in English and French editions), New York City, and Connecticut (the latter a guide to Nature Conservancy preserves). When ordering books from the AMC, please include $1 to cover postage and handling for the first title ordered, and 25¢ for each additional title.

Backcountry Publications (P.O. Box 175, Woodstock, VT 05091) is known for its "Fifty Hikes" series, now in its second decade. The titles in this series—each of which costs $8.95—guide the hiker around an area that stretches from New England into the Adirondacks, the Finger Lakes of New York state, and all of Pennsylvania. New titles this year include *Fifty Hikes in Central New York*, by William Ehling, and *Fifty Hikes in Connecticut*, by Gerry and Sue Hardy. The former is a substantial revision of a previous book, *25 Walks in the Finger Lakes Region*, while the latter is a second edition that includes six new hikes. The past year has also seen some other guides in the series thoroughly revised, including *New Hampshire* and *The White Mountains* (both by Daniel Doan), *Maine* (by John Gibson), and *Massachusetts* (by John Brady and Brian White), while Tom Thwaites's *Western Pennsylvania* is still in its first (1983) edition. (His *Central Pennsylvania* is scheduled for 1985.) Every title in the "Fifty Hikes" series is illustrated with photographs and USGS topo sections. Please include $1.50 per order to cover shipping and handling.

The Canoe as Gift

JIM DALE VICKERY

The Canoe: A History of the Craft from Panama to the Arctic, by Kenneth G. Roberts and Philip Shackleton. International Marine Publishing Company (21 Elm St., Camden, ME 04843), 1983. $50 (cloth), $250 (leatherbound limited edition).

It is generally known that the canoe, more so than any other mode of transportation, was the means by which North Americans explored, surveyed, and settled this continent. It was, then, an indispensable tool—a way to traverse water for practical ends. Yet over the centuries canoeing has become an end in itself. This intriguing transition has had an effect on most people active in the outdoors.

The present book describes self-pro-

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pelled watercraft from the dawn of recorded North American history to the middle of the 20th century. Here is information about the role of the canoe in a wide variety of cultures, relating to its use, construction, and place in myth and legend. In fact, its concentration on ethnohistorical detail—on the canoe as symbol and idea as well as tool—is one of the book's delights.

Let it be said, however, that the title is a bit misleading. The authors use the word *canoe* in one of its oldest and broadest senses: as a boat without decks. It is a liberty they take rightly and well.

There is discussion of primitive rafts and floats, oceangoing dugouts (hollowed logs), kayaks and umiaks of the Arctic, piraguas and cayucas of Central America, and the well-known birchbark canoes of the North Woods. Even "bull boats" get a short chapter; oval vessels fashioned from animal hides and sculled by one paddler, they enabled Hidatsa and other Indian tribes to cross the Missouri River. The book evaluates watercraft of the ancient Aztecs and Mayas, of early Florida, California, the Mississippi River region, and the East Coast. The role of the canoe (and its paddlers) in the French and British fur-trade periods is also analyzed as the reader progresses toward the book's closing sections on "Tourists and Sportsmen" and "The Modern Canoe."

The Canoe was conceived on a small Canadian lake while authors Roberts and Shackleton were hunkered down beneath northern lights during—of course—a canoe trip. "It was a magical night," they recall in the introduction, "a night for dreams before sleeping, a night when the romantic past melded easily with the living present."

There, beside a canvas canoe, they dreamed of the golden days when the land's indigenous peoples traveled by canoe; when all waterways were highways; when schemes of war and peace were intertwined with wood, animal skins, and water. Roberts and Shackleton decided to give the canoe the prominence it deserves in the telling of North American history. They also wanted to credit native peoples for their inventiveness, craftsmanship, and skill on the water. (The canoe, after all, was passed on to Europeans as a gift.)

The authors' first major literary obstacle was geographical focus. Research led them quickly to the discovery that the canoe is a universal vessel, used virtually everywhere that water must be crossed or descended. Yet something happened to the canoe in North America that set the region apart: Here it evolved from old forms into new ones, and here it has remained in use from man's primordial past to the present.

Although its scope was reduced from global to continental proportions, the book

still spans a territory bridging tropical and polar waters. But the authors' passion for canoes can't hide two drawbacks. One is physical—the book is unwieldy and the type small; the other a question of completion.

The second problem—one of editorial proportion—lies in the book's ending. The authors try in the final 40 pages of text to elaborate on the modernization of canoes as recreational vehicles, to bring the canoe up to date. It is a gallant effort, one no other book has fully attempted. But *The Canoe* fails—perhaps inevitably. True, it touches on wood and canvas canoes at the turn of the century, metal canoes, cedar strips, the birth of canoe clubs, and canoe races, but practically all this information predates 1950. The book doesn't discuss the *recent* history of these remarkable craft.

It doesn't, for example, cover the evolving canoe designs of Pat Moore, Mike Galt, Cliff Jacobson, Gene Jensen, and others, vintage 1970–1983. Some of these designers have incorporated hydrodynamic principles arising from modern physics.

It doesn't explore the changes bent-shaft paddles have had on paddling efficiency, an improvement comparable in its impact to that which padded hipbelts have had on modern backpacking.

And it doesn't discuss the rediscovery of solo canoeing in what amounts to a revolution in canoesport.

The Canoe, therefore, is not—as its publisher claims—*definitive*. Here, nonetheless, as the book's subtitle suggests, is an historical eddy of visual and verbal beauty. Here is a classic: a book that is to canoeing what Audubon's *Birds of North America* was to ornithology.

It rightfully leaves us enchanted with a remarkable craft.

Jim Dale Vickery is a contributing editor for Canoe *magazine. His articles and photographs have appeared in* The New York Times *and* Canadian Geographic.

Brief Reviews

Beyond the Wall, by Edward Abbey. Holt, Rinehart and Winston, 1984. $7.95, paper.

"It is a man's duty to speak for the voiceless." And this is exactly what Edward Abbey succeeds in doing in *Beyond the Wall*, a collection of the outspoken author's essays originally published in diverse sources between 1971 and 1984.

The sprawling sun-baked desert, its landscape, light, air, and primordial inhabitants are the characters in these essays. Often

speaking in a voice of outrage, the author lashes out at such disturbing practices as the taming of America's wild and scenic rivers, the proliferation of chemical agriculture and DDT, and the rape of the desert by the military.

However, there is larger voice in the book that justifies this outrage. That is the voice of the beauty of the desert. The exotic plant life, the amazingly resourceful wildlife, and the presence of the desert itself—its silence and sand dunes, its precious water, desert flowers, and rock art—speak eloquently of the need for preservation. Abbey's physical descriptions of the desert reflect its harsh beauty in images culled from the "authentic experience" of trekking the land in search of nothing but the experience itself. That experience includes a large dose of humor gleaned from such incongruities as the idea of stalking these ancient, arid, foreboding zones while munching Fig Newtons and slurping Tang.—*M.C.M.*

Facts About Alaska, The Alaska Almanac. Alaska Northwest Publishing Co., Anchorage, 1984. $5.95, paper.

HERE'S A BOOK packed with entertaining and unconventional facts about America's last frontier. This 200-page-plus almanac is an annual compilation published by the editors of *Alaska* magazine, the *Alaska Journal*, the *Milepost*, and *Alaska Geographic*.

Perhaps you've been searching for a list of the names of the past 24 winners of the Miss Alaska Pageant, or wondering whether it would be appropriate to wear your new bunny boots to that potlatch on Saturday night. Ought you to accept if a native Alaskan offers you a heaping bowlful of Eskimo ice cream smothered with fresh hooligans and chitons? The answers to these and hundreds of other questions can be found in this eclectic collection.

The *Almanac* also contains a wealth of other important (and slightly more practical) facts, such as temperature ranges around the state, a list of campgrounds, a calendar of events for the year, and the complete text of the Alaskan constitution. There are lists of universities and colleges, ZIP codes, state parks, radio stations, city names (with a pronunciation table), newspapers, historic places, chambers of commerce, and so on. Maps, charts, and tables abound.

Don't be left in the cold: Master this material, so that when an Alaskan tells you to grab your *ulu* and a warm *kuspuk* and jump in your *umiak*, no one will ever suspect you're just an inexperienced *cheechako* from the Lower 48.—*M.C.M.* □

The Sierra Club Announces 1985 FOREIGN TRIPS

THE SIERRA CLUB HAS PLANNED a wide variety of spectacular foreign trips for our members in 1985. Whether it's searching for the elusive mountain gorilla or biking through Inner Mongolia—we have it all! Our conservation-oriented trips are planned and led by Club-trained members, giving the trips that special Sierra Club style. The following pages give you a preview of our 1985 program. For more information on trips you find interesting, send in the coupon on page 75. The dates and cost of the trips are subject to change. *Please see the January/February 1984 issue of* Sierra *for more 1985 foreign trips, and for reservation information.*

AFRICA

(555) Gorilla and Wildlife Safari, Tanzania/Rwanda—June 28-July 16. *Leader, Patrick Colgan, P.O. Box 325, La Honda, CA 94020. Cost: $2730.* The remote, unimpacted wildlife preserves of central East Africa abound with the greatest concentration of large mammals and birds anywhere on earth. Hippo, lion, elephant, cheetah, wildebeest, gazelle, and mountain gorilla roam free in their natural surroundings. On this unique, overland, mostly tented safari, we travel mainly by off-road vehicle and, where possible, by foot. Our itinerary includes the Serengeti and Ngorongoro Craters National Parks, and in Rwanda we will abandon the comforts of civilization to seek the domain of the elusive mountain gorilla. Leader approval required.

(615) Mountains to the Sea Safari, Kenya—September 8-27. *Leaders, Emily and Gus Benner, 155 Tamalpais Rd., Berkeley, CA 94708. Cost: TBA.* This trip is designed to provide a fascinating blend of Kenya's varied fauna, flora, and cultures. We will be visiting some of the finest wildlife parks in East Africa: Samburu, Masai Mara, Lakes Naivasha and Baringo, the Abardares, and the moorlands of Mt. Kenya. We will then journey by train (the famous "lunatic express") down to the white sand beaches of Mambasa and the ancient Arabic town of Lemu on the warm Indian Ocean. Traveling with our naturalist guide by landrover, foot, railway, small plane, canoe, and dhow, we will observe and photograph at close range a variety of game, exotic birds, and waterfowl, and visit native villages and tropical islands. An optional climb of Mt. Kenya is planned for the week following the trip.

(625) The Omo Experience, Ethiopia—September 15-October 10. *Leader, Bill Bricca, P.O. Box 159, Ross, CA 94957. Cost: $2585.* Be one of a handful of travelers to raft the Omo River through the untouched wilderness of southwestern Ethiopia. Experience an unparalleled mixture of whitewater adventure, big game viewing, and a rare opportunity to observe people living as they have for centuries. The river voyage starts at Jimma Bridge near the village of Abelti, and ends 330 miles downstream at the confluence with the Mui River. Two days will be spent sightseeing in Addis Ababa, the famed capital of Ethiopia. Fortunately, the Omo flows in the southwest area, far from the politically unstable northern and southeastern borders, and in an area so remote that the people living along its banks have no idea that a country called Ethiopia exists.

(660) Kenya-Tanzania Wildlife Safari—December 28, 1985-January 15, 1986. *Leaders, Ruth and Jim DeMartini, 947 Lochness Ct., Fort Collins, CO 80524. Cost: TBA.* Experience the natural wonders of East Africa by landrover and on foot during the finest season of the year. This adventure safari will explore the alpine beauty of Mt. Kenya, the birds of the Great Rift Valley, and the incredible numbers and diversity of plains game and their predators on the Serengeti Plains. We'll photograph wildlife in Ngorongoro Crater, view footsteps of ancient man at Olduvai Gorge, visit Masai villages, and tour the slopes of Mt. Kilimanjaro. We'll travel off the beaten path, spend a few days backpacking, and spend most nights in tented camps.

CHINA

(902) Mt. Anyemaqen Trek, China—October 1-31, 1984. *Leader, Mike Brandt, 10229 Variel Ave., Unit 22, Chatsworth, CA 91311. Cost: TBA.* Mt. Anyemaqen (20,600), located in Qinghai Province, owes its name to the local Tibetan people who used to regard it as a holy mountain. The mountain is rich in mineral deposits, with a wealth of rare birds, virgin forest, leopards, bear, gazelle, musk deer, and blue sheep. Our trek will include sightseeing in Beijing, a train ride to Xining (where we will visit the Taers Monastery), a bus/truck ride to Snow Mt. Commune, and trekking 11 days around Mt. Anyemaqen, reaching elevations as high as 16,000 feet and returning via Qinghai Lake. Leader approval required.

(575) Inner Mongolia Bike Trek—July 13-August 9. *Leader, Brad Hogue, 3750 Long Ave., Beaumont, TX 77706. Cost: TBA.* Ten-speed trail bikes and the high, exotic, and semi-arid plateau of the Inner Mongolian grasslands provide the setting for this moderately paced bicycle trek. Our first stop will be Beijing, for a four-day whirlwind of sightseeing in one of the most fascinating cities on earth. Then overland by train to Datong Hohhot, and finally the grasslands for two weeks of the most dynamic bicycle trekking you'll ever experience. We'll sleep in communal yurts, and see magnificent displays of Mongolian horsemanship. Leader approval required.

EUROPE

(535) Italia Centrale by Bike—May 8-23. *Leader, Ed McManus, 912 Cerrito St., Albany, CA 94706. Cost: $995.* Enjoy the spring flowers and medieval hilltowns of the rolling Tuscan and Umbrian countryside. Our figure-eight tour will take us south and east from Florence. Riding days will take us through farm and wine regions meticulously nurtured for more than 20 centuries. Nights and layover days will be spent in towns famous for art, history, and architecture. Accommodations will range from *pensiones* to a monastery. Continental breakfasts, picnic

lunches, and dinners in local *trattorias* will be our daily fare. We will carry our own gear. Leader approval required.

(540) Lake District and Cotswolds, England—May 11-25. *Leader, Richard G. Terwilliger, 7339 Pinecastle Rd., Falls Church, VA 22043. Cost: TBA.* This trip combines the charm of the Cotswold Hills and the ruggedness of the Lake District. With a week in each you can really enjoy the beauty and varied hiking of these two areas. Accommodations will be in historic English residences specially converted to guest houses.

(542) Inland Waterways of England—June. *Leader, Marleen S. Van Horne, 423 S. 12th St., San Jose, CA 95112. Cost: TBA.* Meander through the heart of England as a passenger on a converted narrowboat, the traditional freight carrier of Britain's canal system. Drift peacefully past farm and village, or hike the towpath. Bird-watch or people-watch as the Gentle Highway flows through the industrial centers of England and into the countryside.

(545) Exploring the Unknown Switzerland—June 15-30. *Leader, Richard Weiss, 448 Wellesley St. East, Toronto, Ontario, Canada M4X 1H7. Cost: $1400.* The first week of this leisurely to moderate trip will emphasize the many alpine delights in this subtropical pocket of Italian Switzerland. We will take dayhikes from our hotel base on Logo Maggiore, and there will be ample time to relax and enjoy this peak period of the magnificent late-spring wildflower season. In week two we move on to explore the remarkable Engadine. Inn-hopping through this more rugged region, we will have many opportunities to admire the unusual architecture and culture of the Romansch Swiss.

(550) Highlands and Islands of Scotland—June 17-July 13. *Leaders, Mildred and Tony Look, 411 Los Ninos Way, Los Altos, CA 94022. Cost: TBA.* The Scottish Highlands captivate visitors with early-summer blooms of rhododendrons and azaleas, rugged mountains and lochs made famous in Scottish literature, and unique villages inhabited by hardy Scots. Our meeting point will be Edinburgh, where time is available to visit the historic Royal Mile, the famous Botanical Gardens, and the 200-year-old New Town. Two van-buses will take us to mountain areas of the western and northern Highlands, and the islands of Skye, Harris, and Lewis, in the company of a Scottish naturalist. Walking, hiking, photography, and nature study can be as moderate or strenuous as you desire.

(560) Tour du Mont Blanc, France—June 30-July 14. *Leader, Dick Williams, 609 S. Taylor St., Arlington, VA 22204. Cost: $1065.* We will walk around Mont Blanc, Europe's highest mountain, on classic alpine trails of moderate elevation through France, Italy, and Switzerland. The hike features splendid mountain scenery, close approaches to several large glaciers, varied wildlife, and outstanding wildflowers. Hiking is moderate to strenuous, with numerous layover days for loafing or dayhikes. We stay in comfortable small hotels, with one night in a mountain refuge. Leader approval required.

(565) Pyrenees Trails, Spain—July 3-17. *Leader, Rosemary Stevens, 3700 Fairfax Way, South San Francisco, CA 94080. Cost: TBA.* From Castile's dryness to rushing water, wildflowers, snowfields, and jagged peaks—this trip will be a photographer's paradise. We will travel by bus from Madrid to the Pyrenees, where we will hike, at a moderate pace, from village *hostales* to mountain *refugios*, through green valleys, and along picturesque lakes. The trip will end in the bustling Mediterranean port of Barcelona.

(570) Biking Alluring Alsace—July 4-15. *Leader, Lynne Simpson, 1300 Carter Rd., Sacramento, CA 95825. Cost: $1000.* A leisurely meander along the French side of the Rhine, *à la bicyclette!* Both German and French cultural aspects are found in this region. Bicycles will be provided to participants, with personal luggage transported in a van. Accommodations will be in rustic hotels, and the relaxed pace will allow time for exploration of the captivating villages and towns along our route.

(580) Land of the Basques, France/Spain—July 15-28. *Leader, John Doering, 6435 Freedom Blvd., Aptos, CA 95003. Cost: TBA.* Besides the flashing rivers and 12th-century Romanesque churches, we will wonder at the prehistoric menhirs and circular tombstones that identify the rich Basque culture, as we follow ancient trails through rolling green hills and above the fascinating Gorges of Kakouetta. We will admire the skill and strength of the *pelote* players in the village *fronton*, the touching voices of the balladeers, and the intricate footwork of the dancers as we join them in festivals celebrating ancient legends. Accommodations will be in *gites* and country *auberges*.

(582) Dalmatian Coast Bike and Hike, Yugoslavia—July 20-August 2. *Leaders, Frances and Patrick Colgan, P.O. Box 325, La Honda, CA 94020. Cost: $1285.* Yugoslavia's exotic Dalmatian Coast, with its islands, sun-drenched beaches, and dramatic lake-studded mountains, is the setting for this moderate biking and hiking experience. With a sag-wagon to ferry dunnage between Plitticka and Dubrovnik, we'll average 40 miles a day. There will be layover days for music festivals, side trips to the islands, and dayhikes in the rugged karst mountains. We will sleep in creaking old guest houses and hotels, and the magic, the music, and the folklore of Croatia will fill our dreams.

(585) Backpacking in Southern Corsica—July 31-August 8. *Leader, Michele Ferrand, 2457 10th St., Boulder, CO 80302. Cost TBA.* Snowcapped mountains surrounded by the azure Mediterranean—this is Corsica, a sparsely populated island 100 miles south of the Riviera. Along with the fragrance of the *maquis*, we will find a richness of scenery, culture, and history nicely isolated from mainland Europe. We plan a moderately paced backpack in the mountains, with visits to small villages and a look at Napoleon's hometown. An optional stay at a coastal resort can be arranged. We will carry light loads and will supplement our diet with local delicacies from *bergeries* along the way.

(590) Black Forest and Bavarian Castles—August 1-10. *Leaders, Natasha and Carl Wood, 356 Bluff St., Alton, IL 62002. Cost: TBA.* Walk with German guides among the Black Forest's pine-clad mountains through quaint villages and medieval Freiburg, spending each night in a comfortable hotel. Dayhikes will be made in the spectacular alpine lake settings of the fantasy castles Neuschwanstein, Hohenschwangau, Herrenchiemsee, and Linderhof, built for Bavaria's King Ludwig II.

(600) Hiking in the Stubai Alps, Austria—August 15-28. *Leader, Bert Gibbs, P.O. Box 1076, Jackson, CA 95642. Cost: $1075.* The trip begins with a bus ride to Obernberg near the Brenner Pass. We will then follow a preplanned route each day, hiking from one picturesque village to the next and staying overnight in small guesthouses or inns. Since your duffel will be transported to the next stop, you carry

only the items needed for the day. The views of the Stubai Alps will be breathtaking as we hike from five to eight hours per day at altitudes from 5,000 to 7,000 feet. We will rest in the rustic comfort of alpine villages, and sample the flavorful food of the people who live in these beautiful, majestic mountains.

(605) Bike and Hike in Ireland—August 29-September 11. *Leader, Len Lewis, 2106A Clinton Ave., Alameda, CA 94501. Cost: TBA.* Come away with me to the "wild, wild West" of Ireland for two weeks of easy to moderate biking and occasional hiking. Our route will take us from the cities to the byways, past the bogs and maybe up the Burran, from the mountains to the seacoast, and through counties Clare, Galway, Mayo, Sligo, and Donegal. We will sleep in comfortable bed-and-breakfast inns, feast on the best of Ireland, and learn a little Gaelic. We'll set a pace that will allow us time to enjoy it all.

(610) Swiss Alps: Abelboden to Grindelwald—September 2-10. *Leader, Ann Hildebrand, 1615 Lincoln Rd., Stockton, CA 95207. Cost: $810.* Hike and explore some of the world's most renowned landscape—the Berner Oberland. Beginning in pastoral Abelboden, we will hike through the green alps, past grazing cattle, up rocky slopes, and over dramatic passes. As we progress, the *ausblick* from each of the four passes will surpass the last. As the journey culminates we will be surrounded by spectacular glaciated peaks and wonderful deep valleys with hanging waterfalls. A trip on the cog railway through the Eiger to the Jungfraujoch will be included. We will lodge in Alpine Club huts and small mountain hotels.

(620) Silvretta/Dolomites Rambles, Austria and Italy—September 12-26. *Leader: Walt Goggin, 18836 Lenross Ct., Castro Valley, CA 94546. Cost: $1130.* While based at comfortable mountain hotels, we will take dayhikes into these two quite different yet equally spectacular alpine regions. An overnight stay in Innsbruck will provide an introduction to this venerable crossroad of European cultures. The September trip date suggests settled weather, good visibility, and reduced visitation.

HIMALAYAN COUNTRIES

(595) Himalayan Passage—August 5-September 7. *Leader, Peter Overmire, 293 Union St., San Francisco, CA 94133. Cost: TBA.* This Trans-Himalayan trip begins in Srinagar in the Moslem Vale of Kashmir. We travel north by bus to Leh, in Ladakh, often called "Western Tibet," for several days of acclimatization while visiting the nearby Buddhist monasteries of the Indus Valley. We then start our moderately strenuous trek south, crossing six passes over 15,000 feet, to Padam, the capital of the Hidden Kingdom of Zanskar. We continue trekking southwest, crossing the Himalayan crest by another 15,000-foot pass, and via one of the most sacred Hindu sites, Amarnath Cave, then back to Srinager to relax in the comfort of the fabled Victorian houseboats.

(635) Lamjung Himal Trek, Nepal—October 7-26. *Leader, Serge Puchert, 1020 Koontz Ln., Carson City, NV 89701. Cost: $815.* This economy trip offers a 16-day trek into the Lamjung Himal just east of the main Annapurna Range. Starting from Pokhara, our circular route will visit many hill villages of the Gurungs, from whom the British recruit many of their famous Gurkha troops. Our mainly ridge route will offer many panoramic views of the whole Annapurna Range from Annapurna South to Lamjung, and at times we will be right under Annapurna IV and Lamjung. We may not see another Westerner as we travel seldom-used trails in a rarely trekked area. Our highest camp will be about 14,000 feet. Leader approval required.

(645) Annapurna Sanctuary, Nepal—November 2-23. *Leader, Dolph Amster, P.O. Box 1106, Ridgecrest, CA 93555. Cost: $865.* We will begin this 18-day economy circle trek in Kathmandu, and our pace will allow ample opportunity to enjoy the incredibly beautiful mountains and small villages through which we pass. With carefully chosen gear, our group will travel "light" to minimize impact as we move at a moderate rate through bamboo, rhododendron, and oak forests. We will return via the Gorapani Ridge, with views of Dhaulaghiri and adjacent peaks. The trip ends with personal sightseeing and a Newari dinner in Kathmandu. Our highest camp will be at 13,000 feet. Leader approval required.

(650) Helembu Trek, Nepal—November 30-December 18. *Leader, Phil Gowing, 2730 Mabury Sq., San Jose, CA 95133. Cost: $775.* The focus of this 15-day, moderate trek into Sherpa country will be the Sherpa villages, Tamang villages, monasteries and, of course, the spectacular views of some of the major Himalayan peaks. But the highlight will be the wonderful Nepalese people we will meet—both our own Sherpas and porters, and the villagers we will meet along the way. This is a good trip for the first-time Nepal visitor, with most of the trek between 6,000 and 9,000 feet in elevation.

(655) Arun Valley Christmas Trek, Nepal—December 21, 1985-January 11, 1986. *Leader, Ginger Harmon, Berth 20, Issaquah Dock, Waldo Point Harbor, Sausalito, CA 94965. Cost: $1150.* Come spend your Christmas holiday in this seldom-traveled valley offering views of three of the four highest peaks in the world: Everest, Makalu, and Kanchenjunga. The Arun Valley, the deepest in the world, lies between Makalu and Kanchenjunga. Starting below 3,000 feet, we will eventually reach a maximum of 13,000 feet on a ridgetop high above the Arun. The relatively low altitude of this trek makes it an ideal winter trip. Leader approval required.

JAPAN

(630) Sacred Mountains of Japan—September 16-October 6. *Leader, Peter Overmire, 293 Union St., San Francisco, CA 94133. Cost: TBA.* The main goals of this autumn trip are the summits of the three most sacred mountains of Japan: Fujiyama, Tateyama, and Hakusan. The trip starts with a few days in Tokyo, and ends in Kyoto, where trip members may extend their stay to visit the many shrines and temples. We will live in the local fashion—staying in Japanese inns, eating the local diet, and visiting a number of Japanese national parks, with ample opportunity to climb other peaks and enjoy the beginning of the glorious fall colors.

PACIFIC BASIN

(640) Sailing in the Kingdom of Tonga and Exploring Fiji by Boat, South Pacific—October 24-November 13. *Leader, Ruth Dyche, 2747 Kring Dr., San Jose, CA 95125. Cost: $1990.* For nine days we will sail and explore the Vava'u Islands in the ancient Polynesian Kingdom of Tonga. Each sailboat will have a skipper, so no previous sailing experience is necessary. Afterward we'll visit Tongatapu, the cultural and religious center, and the island of Eua, ideal for hiking and birdwatching. We'll stay in Tongan guesthouses, enjoy traditional feasts, and become acquainted

with the people and culture. On Fiji we'll tour the fabled coral coast before embarking on our boating adventure to the primitively beautiful Yasawa Islands. Our accommodations will be on a modern inter-island boat.

(665) Australia, Land of the Sun—December 30, 1985-January 19, 1986. *Leader, Kent Erskine, 272 Orange Ave., Ashland, OR 97520. Cost: TBA.* Escape from winter to the land of the Southern Cross, where warm oceans meet boundless land, and unusual creatures hold sway. We'll experience Australia as others rarely do, from the islands of the Great Barrier Reef, through lush coastal forests, along beautiful river valleys, and over the crest to the interior. This trip offers a range of exciting activities: a night at a sea turtle nesting beach, a tropical river trip, visits to critical habitats for the unusual wildlife, and sojourns in cities to experience the best of the Australian people. Travel by boat, train, plane and, most enjoyably, by foot, will bring us closer to this fabulous land.

SOUTH AMERICA

(670) Bio Bio River Run, Chile—December, 1985. *Leader, Blaine LeCheminant, 1857 Via Barrett, San Lorenzo, CA 94580. Cost: $2280.* A clear, crisp course that cascades almost continuously, the Bio Bio is Chile's largest river. Tumbling down the steep western slope of the Andes through the "Switzerland of South America," it surpasses all other American rivers in raw beauty and powerful rapids. It is, it seems, the dream river actualized: clear, clean water, hot springs, an active volcano, tributary waterfalls, glaciers, unbelievable panoramas, alpine lakes, and summer weather. Look south to the Bio Bio.

1984/1985 WINTER TRIPS

(378) Boating on Mexico's West Coast, and Humpback Whalewatching—December 15-22. *Trip Coordinator, Lynn Dyche, 2747 Kring Dr., San Jose, CA 95125. Cost: $995.* This boat trip aboard our comfortable vessel starts in Puerto Vallarta and explores the coastal tropics and offshore islands of western Mexico. A visit to the sleepy town of San Blas allows us time to explore the inland water channels where exotic birds can be seen. Hikes to the rain forest take us to see wild orchids, tropical parrots, and becards. We will hike on Isabel Island to observe and photograph the colorful courtship behavior of the blue-footed booby and the magnificent frigate bird. The tropical waters are excellent for fishing and other water activities. Humpback whalewatching is spectacular as this active whale breaks the surface with its distinctive nose or flipper.

(375) Adirondack Ski Tour, New York—January 13-18. *Leader, Walter Blank, Omi Rd., West Ghent, NY 12075. Cost: TBA.* While staying in an AMC lodge, we will take numerous day tours in the High Peaks region of the Adirondacks. There will be one overnight trip to a wilderness cabin high in the Johns Brook Valley. One day will be devoted to intensive instruction by a certified Nordic instructor in Telemark skiing techniques.

(376) Long Pond, Moosehead Lake Region, Maine—February 4-10. *Leader, Fred Anders, 117 Leverett Rd., Shutesbury, MA 01072. Cost: $220.* East of Greenville is a large wilderness tract containing numerous mountains in the 2,000- to 3,000-foot range. Our log cabins are nestled along the shore of Long Pond, six miles from the nearest paved road. All personal equipment must be skied in via old logging roads. Once the wood stoves are blazing, the trip will assume a relaxed posture. Optional day trips include: The Hermitage, Trout Pond, Slugundy Gorge, and Monument Ledges. Cold days, lots of snow, and good skiing are planned.

(379) River of Ruins Raft Trip, Mexico—February 25-March 8. *Trip Coordinator, John Garcia, 124 Romero Circle, Alamo, CA 94507. Cost: $1145.* This trip offers rafting and ancient Mayan ruins in a tropical jungle setting. Our trip begins in Villahermosa, where we will see the ancient Olmec heads. We then travel to Palenque and Bonampak, where we can explore the Mayan ruins. We will board our rafts on the Usamacinta River, which forms the boundary between northern Guatemala and Mexico, and which will be our road through the lush jungle. Highlights will include visits to the Mayan city-states of Yaxchilan and Piedras Negras, and there will be opportunities to observe a large variety of exotic plants, animals, and birds.

(377) Zealand Valley Cross-Country Ski, White Mountains, New Hampshire—March 3-8. *Leader, Maggie Seeger, 54 Waldo Rd., Arlington, MA 02174. Cost: TBA.* North of Franconia and Crawford notches, the Zealand Valley provides outstanding cross-country touring. We can visit iced-over Thoreau Falls, climb Mt. Hale or Zeacliffs for the long winter views, and ski across the beaver ponds and through groves of white birches. We'll choose each day as we go out from our lodging at AMC's Zealand Hut. Day One is tough—seven miles with full packs. Thereafter the trip is moderate with strenuous options. Skiers should be of intermediate level with experience off of groomed tracks.

FOR MORE DETAILS ON OUTINGS

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

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CAMPGROUND CRITTERS

JEAN SNYDER POLLOCK AND ROBERT POLLOCK

"LOOK AT THE CHIPMUNK!" This cry is heard every summer in the campgrounds of the United States. If you are camping in the eastern states, the animal that catches your eye could only be a chipmunk. But if you're in the West, the creature could be either a chipmunk or a golden-mantled ground squirrel. Both of these friendly, furry animals are brown, black, and white. Both eat seeds, berries, and green plants, sometimes stuffing their cheek pouches with something extra to carry home. And both live in burrows in the ground. So how can you tell the difference between the two?

Their appearance will give you a clue. The chipmunk has light and dark stripes along its sides and back, while the golden-mantled ground squirrel has these stripes only on its sides. But the best way to tell them apart is by looking at their eyes. A chipmunk has a white stripe above and below each eye as well as a dark stripe through each eye. A golden-mantled ground squirrel has no stripes on its head, but it has a white ring around each eye.

Both of these small mammals can run fast, but the chipmunk is the speedier of the two. It rarely sits still, while the ground squirrel moves at a more leisurely pace. Both have loud voices for such little creatures, making squeaking or chirping sounds when something disturbs them. Often the chipmunk will flick its tail up and down with each chirp. Both of these animals will sometimes climb into trees or shrubs.

Chipmunks are about eight or nine inches long, and almost half of that is tail. Golden-mantled ground squirrels are chubbier and longer than chipmunks—the head and body combined measure about seven inches, and the tail adds another three or four inches to their length.

If you are camping in the northern part of the United States—anywhere from Minnesota to Maine—or in the Rockies or the Appalachian Mountains, and you hear a loud chattering coming from a pine tree, it is probably a red squirrel. This saucy creature lives in a nest made of leaves and twigs, or in a hole high up in a tree. A scolding voice lets you know that you are a trespasser in its part of the forest. You will see a red squirrel on the ground dodging from tree to tree, then climbing quickly up into the branches and leaping across to another tree. Often it will chase birds as they hop from branch to branch.

If you look at the bases of nearby trees, you probably will find several piles of cones, amounting sometimes to a bushel or more. The red squirrel has picked the cones from the trees and let them fall to the ground; then it has carefully collected them into huge piles. Later the squirrel will cut the cones apart and either eat the seeds

Illustrations by Terry Shaffer

Chipmunk (left); golden-mantled ground squirrel (right)

Gray jay

right then or store them for the coming winter. (The small pieces left from the cones can sometimes be found in large piles called *middens*.) The red squirrel also eats nuts, birds' eggs, and mushrooms.

The red squirrel is a medium-size squirrel. Its head and body together are about seven inches long, and the tail is about five inches long. The fur on its head, back, and tail is reddish-gray, but its stomach is white. Like the golden-mantled ground squirrel, the red squirrel has a white ring around each eye. If you are camping in the mountains of the West Coast, you may see a squirrel very similar to the red squirrel that is called the *chickaree*.

A very friendly squirrel found in campgrounds in the eastern half of the United States is the eastern gray squirrel. True to its name, it is grayish in color. This bushy-tailed creature is one of the larger squirrels. From the tip of its nose to the tip of its tail, it is 16 to 20 inches long.

Eastern gray squirrels live in forests of trees (such as oaks and beeches) that produce nuts. They prepare for winter by storing nuts in small holes in the ground, one nut in each hole. Sometimes the squirrels do not find all the nuts they have buried, and these may sprout and grow into trees. So, without knowing it, the squirrels are helping to plant forests. In addition to nuts, the squirrels eat seeds, mushrooms, and fruits.

The eastern gray squirrel may nest in a hole in a tree trunk, or build a large nest of leaves way up in the branches. These nests are usually at least 25 feet above the ground. When the trees are bare in the winter, you probably will see many of these leaf nests, which look like big, dark balls in the branches.

Campground garbage cans may be raided by the raccoon. This roly-poly animal is found near water across the entire United States, except in parts of the Rocky Mountains and the hot desert areas. It has a brownish body, but is best recognized by its black mask and the light and dark rings on its tail. Raccoons can grow to be a yard long, and may weigh as much as 35 pounds. They eat almost any food, including fruit, nuts, seeds, insects, frogs, and birds' eggs. They usually search for food late at night, but in some campgrounds you may see them in the early evening. They live in hollow logs or holes in trees.

Raccoons

A flash of blue and a loud squawk announce the arrival of a Steller's jay. This large western bird is about a foot long from beak to tail. A crest or topknot of feathers on the bird's head bounces as it moves. The crest, head, and shoulders are almost black, while the back, tail, and stomach are a beautiful blue. The jay has a white bar over each eye and two white streaks on its forehead.

The Steller's jay likes to imitate the calls of other birds, as does its Eastern cousin the blue jay. These noisy birds often warn other animals of approaching danger by making a fuss or mimicking the call of a hawk. Despite their loud voices, bright colors, and bold behavior, however, these jays are easily frightened. In May the Steller's jay builds a large nest of twigs and mud in a remote pine tree.

The gray jays swoop into the trees on silent wings because their feathers are so soft that they make no noise. They have very quiet voices, too. These birds always seem to know when campers are eating; they perch in a nearby tree and wait patiently for something edible to fall to the ground. The gray jay—which has patches of white on its head and the tip of its tail—lives in the northern states and in the western mountains.

Snow may still be on the ground in March when the gray jays start to build their nests of twigs. The nests are lined with dry grass and soft, warm feathers. Some of the gray jays you see in the campground in the summer are young birds that were hatched in the spring.

Mountain chickadee

If you hear something say "dee dee dee," it's probably a mountain chickadee, found—as its name suggests—in the mountains of the Western U.S. This little bundle of feathers is quite a clown. It is very friendly and inquisitive, hardly ever sitting still. If you listen carefully, you can hear it whistle its own name: *chick-a-dee-dee-dee*.

The chickadee is about five inches long. It has a black head (with a white stripe above each eye), a white cheek, and a black chin. Its back and wings are gray, and its stomach is white. The chickadee builds its nest in a hole in a tree, and its eggs hatch in June. If you see a chickadee carrying a beakful of food, it probably means that a nest is nearby. By watching quietly, you may be able to see it go into its nest hole to feed seeds and insects to its young.

In a campground that is near an ocean, lake, or river, you may see gulls, ducks, or geese begging to be fed. The easiest such bird to recognize is the large Canada goose, which has a black head and neck and a white band going under its chin from one cheek to the other. You will also know it by its honking call. Mallard ducks may waddle ashore quacking all the while. The female is mottled brown, but the male has a pretty greenish head and a white neck band. You may also see several kinds of gulls that have learned that campgrounds are good places to find scraps of food.

These birds and small mammals may come to your campsite to see if you have dropped any food. But it is not a good idea to feed them from your hand or try to touch them, because they may bite. Remember that they are wild animals, and we should not try to tame them. We should just enjoy watching them, because they are beautiful and free. □

Robert and Jean Snyder Pollock are freelance writer/photographers living in Allenspark, Colo. Their article "How Birds Get Their Names" appeared in the September/October 1983 Sierra.

A Tale of Two Chapters

BOB IRWIN

TWO DATES exactly 11 months apart mark two notable Sierra Club conservation milestones. On those dates two chapters successfully capped a decade or more of campaigning for wilderness protection in their areas:

• On June 2, 1983, Ontario Natural Resources Minister Alan Pope announced the establishment of six new wilderness parks and cabinet approval of 149 more areas that will become provincial parks by the year 2000. In one stroke, says former Ontario Chapter Chair Ric Symmes, the number of parks in the province doubled (to 288 units), while their total area surpassed 23,000 square miles—nearly 6 percent of the province.

"It was a dramatic announcement," Symmes adds, "and a high point in the years of struggle by the Sierra Club of Ontario to establish wilderness as an important and politically desirable land use in a province where more than 80 percent of the land is publicly owned."

• On May 2, 1984, the House—and the Senate the following day—passed the 16,500-acre Irish Wilderness Bill. On May 21, the President signed it. Success had come at last after years of efforts by the 4,000 members of the Sierra Club's Ozark Chapter as well as for thousands of other Missouri environmentalists.

Proposals to protect that unique assemblage of forests, rocky hills, sinkholes, and caves in southcentral Missouri date from Aldo Leopold's visit to the area in the 1920s. The first bill was introduced in Congress in 1971, followed by others in every succeeding session. None made it all the way—until the current session, the 98th—because of stubborn opposition from the local member of Congress as well as from lead-mine and timber companies. With the Irish Wilderness under statutory protection at last, the Ozark Chapter and its host of Missouri allies indeed have good reason to celebrate. But they are not likely to cease their vigilance. They are determined to keep those 16,500 special Ozark acres forever wild.

Holding a paddle presented to him by the Club's Ontario Chapter, Ontario Natural Resources Minister Alan Pope fields questions from the pro-parks audience.

Two campaigns, two successes—albeit somewhat open-ended ones. Although each campaign operated under radically different ground rules—Canadian and U.S.—each involved hundreds of volunteers from the concerned chapter and from other environmental groups. In each case a coalition was formed early on, lending unity and strength to the campaign.

APPLYING PRESSURE ENDLESSLY

Janet Grand's personal "venture of discovery" in August 1980 set her on the path of wilderness protection. Wanting to see northern Ontario's wild country, she signed on for a canoe trip led by Thunder Bay outfitter and wilderness park advocate Bruce Hyer. (The only practical way to visit that land of a quarter million lakes is by canoe.) Some 200 miles north of Lake Superior they entered the then-proposed Ogoki-Albany wilderness, now included in the new Wabakimi Wilderness Park. Janet took in the wild beauty of the land, the ideal habitat for woodland caribou—and the fresh logging

Ric Symmes, past chair of the Ontario Chapter, addresses a chapter-sponsored public meeting in November 1982. The meeting was held in concert with other environmental groups to urge the Ministry of Natural Resources to speed action on Ontario's parks.

scars. The wilderness had to be protected, she told herself. Hyer had informed her and the other conservationists on the trip of the important natural features of the area. She was "all fired up," she said when she got home to Toronto, and that fall she joined the Sierra Club.

At that time the Ontario Chapter was prodding the provincial government to move forward more aggressively with its parks program. Janet put together a slide show on the Ogoki wilderness and soon was presenting it all over southern Ontario. She organized letter-writing and telephone campaigns. She submitted briefs and wrote letters to the Ministry of Natural Resources (MNR) and its parks branch. She soon found herself on the chapter's executive committee, and in 1981 she became executive director of the 1,500-member National and Provincial Parks Association. In that position she was able to further the chapter's policy of building alliances with other Ontario conservation groups. Because the chapter has only 1,000 members in the entire province, former Chair Symmes explains, it must concentrate on what it does best: giving technical and strategic advice, preparing briefs, influencing the media and government officials, and building networks. When mass support is needed, it calls on its larger allies for help.

In November 1982 the Ontario Chapter sponsored a mass meeting, organized by Janet Grand, to discuss the slow progress of the parks program. The MNR had yet to release its promised list of "candidate" parks that after further proceedings would be approved intact or reduced in scope. Natural Resources Minister Pope made an unprecedented appearance at the meeting, fielding questions from the audience of 600 as well as from the featured speakers, while mining-industry people picketed the hall outside. It proved to be another dramatic media event for the Sierra Club, and it quite possibly nudged the MNR into releasing its list of 245 candidate parks before the end of the year. Unprecedented also was a closed-door, two-day meeting of interest groups with Minister Pope, in which chapter chair Ron Burchell played a key role. In Pope's June 1983 announcement of approved parks, however, the list was cut to 155 (6 wilderness parks and 149 park reserves).

This account has spotlighted Janet Grand to show how any concerned Club member with spunk, imagination, and determination can make a difference in a conservation campaign. She enjoyed the added good fortune, of course, of having arrived on stage at just the right moment. But there were others in the Ontario Chapter who pitched in, lending their time and talents to the wilderness-park campaign. Ron Reid, John Bryant, Patrick Gorry, Nancy Benson-Smith, and Anne Champagne wrote briefs on behalf of proposed parks. Ric Symmes submitted briefs to all 48 MNR district managers and contributed to land-use guidelines. Marg Johnston gathered technical data for brief-writers and handled the media and volunteer-participation aspects of the parks-planning process. And there were many others. But all of these Sierra Club people had to operate under certain constraints unknown to their fellow activists in the United States.

The "announcing" of the "approved" parks gives a clue to the way provincial governments operate in Canada. Parks can be created "by a stroke of the pen" not because the Legislative Assembly has voted for them, but because the cabinet has. In this case the cabinet issued an order in council to establish the parks, and Minister Pope announced the decision. When asked if the cabinet could change its mind tomorrow and rescind its parks decision, Arlin Hackman, staff environmentalist for the 20,000-member Federation of Ontario Naturalists, said yes, it was possible, but unlikely that the cabinet would renege on its commitment. Any change of government, to one that could issue its own orders in council, is equally remote at present. The ruling Pro-

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gressive Conservatives, in power since 1943, are well entrenched. Nor is there any effective recourse to the courts for challenging cabinet decisions or ministerial actions, Hackman added. Thus, lobbying by Sierra Club members in Canada is a much different ballgame from the one played by their U.S. counterparts, for Canadian environmentalists must operate under this arms-length distancing of the public from government officials. So how has the Ontario Chapter been able to present its views in any effective way directly to government officials?

The chapter, according to Symmes, generally tries to avoid an adversary stance. In the parks campaign the Club wanted to show the government how to do the "right thing." Members pointed out the benefits of the parks program to the politicians, linking it with the top-priority issues of the day—jobs and tourism. "We showed sensitivity toward the government's problems with parks and showed ways these could be minimized," he said. The chapter further persuaded the bureaucrats to implement an appropriate process to develop and protect the park system. Finally, the chapter sought out and supported friends of parks wherever they could be found—within the government itself or in the vicinities of the proposed parks. Most important to the campaign, Symmes said, was "our persistence, continuous pressure applied endlessly." But because the standards for the six new wilderness parks were lowered to permit mining, hunting, and tourism, that "endless pressure" must continue. "The campaign has just begun," Symmes declared.

Janet Grand called it a Pyrrhic victory: getting the parks, but with too much baggage attached. Arlin Hackman's assessment was stronger: "A dog's breakfast, with very little of anything to make the parks parks." Part of the trouble, he said, was that Minister Pope made concessions to the mining, "hook-and-bullet," and tourism lobbies, and then persuaded the cabinet to exempt the establishment and management of the six parks from the controls of Ontario's Environmental Assessment Act. That act provides for scrutiny of all public-sector projects for their environmental impacts and conformity with government policy. Now Pope is seeking a blanket exemption for all 149 promised parks, a request that a government-appointed review committee urges be denied. Minister of Environment Andrew Brandt, concerned about the number of exemptions already granted, is on the spot. Meanwhile, Hackman says, until a cabinet decision is made, the 149 promised parks are in limbo and are open to abuses. He believes environmentalists would settle for a blanket exemption from the act's provisions to establish the parks, but only if the

SIGHTINGS

Philip Adam

Poet Gary Snyder autographs one of his books for an admirer after the first in a series of poetry readings sponsored by the Friends of the Colby Library. More than 500 people attended the event, which was described by the Pulitzer Prize-winning poet as "a full-scale, all-out retrospective reading of nature poetry." The second reader in the series was San Francisco poet Lawrence Ferlinghetti, who read from his work and spoke on "nature versus civilization."

exemption not be applied to their future management. Hackman believes Pope could still make his target date of June 1985 for establishment of all 149 parks if such a compromise should go through.

FIGHTING FOR THE IRISH

Greg Iffrig, who holds an M.S. in wildlife management from the University of Missouri, joined the Sierra Club in 1977 at the urging of Missouri's state parks chief, John Karel, for whom he worked. Greg found himself getting set to jump into the campaign to save the state's Irish Wilderness area just at the time the Forest Service's RARE II wilderness-nomination program was winding down, in 1979 and 1980.

A band of Irish immigrants were the first non-Indians to know the Irish Wilderness; hence its name. In 1858 a Catholic missionary, Father John Hogan, led them there in a train of 40 wagons to escape ugly anti-Irish discrimination in St. Louis and to start new lives as farmers. Years later, in 1892, Hogan —then a bishop—described the Irish Wilderness somewhat breathlessly in his memoirs: "Nowhere could the human soul so profoundly worship as in the depths of that leafy forest, beneath the swaying branches of the lofty oaks and pines, where solitude and the heart of man united in praise and wonder of the Great Creator."

John Karel's first visit to "the Irish" was on a backpacking trip with friends in November 1972. On their way in they met a trio emerging from the forest: Jonathan Ela, the Sierra Club's Midwest representative; Dave Bedan, chair of the newly formed Ozark Chapter; and the chapter's Executive Committee member, Roger Pryor. They told Karel it was their intention to get timber cutting stopped in that unspoiled part of the Mark Twain National Forest. Karel was impressed: They had a plan; they knew what they were going to do. Later that fall John Karel joined the Sierra Club.

The Irish was proposed as a national forest wilderness area first in 1949 and again in 1968. Partly through the insistence of the Ozark Chapter's first forestry chair, Jean Anne Allen, the Irish was included in the 1971 Eastern Wilderness Bill, along with several other Missouri areas. When the bill passed the Senate, says Karel, "we naively thought it would sail through the House." It didn't. Then-Representative Richard Ichord (R-Mo.), in whose district the Irish Wilderness lay, eliminated it from the bill. In early 1975 new proposals for Missouri wilderness excluded most private inholdings in order to dampen local opposition. Ichord still opposed the Irish, however, and it never made it into the bill. Subsequently all bills for the Irish were introduced in the Senate.

Several passed there, but none ever reached the House floor—all because of opposition from occupants of the district seat. There was general statewide support for the Irish Wilderness, polls and editorials showed, and both of Missouri's senators (Republican and Democratic) and most of its congressional delegation were for it. Some way had to be found to put that consensus to work effectively.

In early 1976 the Missouri Wilderness Coalition, made up of all the major conservation organizations in the state, was organized. The all-volunteer coalition began its work under the leadership of Dan Pierce (of Friends of the Earth) and John Karel. On October 9, President Ford signed legislation designating two new Missouri wilderness areas, 13,500-acre Hercules Glades and 8,000-acre Mingo Swamp, and four wilderness study areas. But that bill never included the Irish. Through the following three years or so the coalition used the massive RARE II program as the catalyst for its various wilderness proposals, including the Irish.

Then, in 1980, Greg Iffrig entered the scene. That year four areas recommended for wilderness during RARE II became wilderness areas: Piney Creek, Bell Mountain, Rockpile Mountain, and Devil's Backbone. The Coalition decided it was time to fight. Since winning the support of the local congressman was deemed hopeless, the Coalition would tackle getting the bill passed over his objection. John, Greg, and the Ozark Chapter took the lead in organizing the statewide supporters of wilderness into an effective political force to secure protection for the Irish. The affiliate list was expanded to include churches, businesses, and outdoor clubs as well as conservation groups. Soon the Ancient Order of Hibernians was added because of its interest in Irish history.

In December 1981 the state's two senators introduced two wilderness bills, one for the Irish and the other for Paddy Creek, some miles northwest. By early 1982 the Missouri Wilderness Coalition had begun a communications program to keep key political leaders and the press informed. Special information packages were sent to members of Congress. Later, as legislation progressed, John and Greg would issue update memoranda to some 350 of Missouri's activist conservationists, detailing the positions of each of the state's 10 representatives and making note of who said what at hearings and of actions that needed to be taken.

The Irish Wilderness campaign took another two years to win. The Missouri Wilderness Coalition was what made the difference—and, as John Karel hastens to point out, the driving force behind that campaign was the Sierra Club. (Karel calls the Club's Ozark Chapter the coalition's "cut-

ting edge.") Hundreds of Sierrans were involved. Enormous and continuous support came from Club staff—particularly, Karel notes, from Tim Mahoney in Washington and Doug Scott in San Francisco. Many Missouri members had been campaigning for the Irish since before the chapter was born. Among them was Bill Bates from southwestern Missouri, who also belongs to the Ozark Society. The chapter's Mark Kaiser coproduced a slide show on the Irish Wilderness. People from the other 40-some groups in the coalition also deserve special mention, said Karel, including Ed Pembleton, a native Missourian on the staff of Audubon's Midwest office, for whom the Irish has been a major issue; Ed Stegner, executive secretary of the Conservation Federation of Missouri, the largest environmental group in the state; Dave Brower of Friends of the Earth, currently a Director of the Sierra Club; Charlie Watson from the Bureau of Land Management, who in 1967 was transferred from Nevada to Missouri, where he worked closely with the Club in appraising the Irish Wilderness; and Jim Berlin, who as supervisor of the Mark Twain National Forest in 1969 ended all timber sales in the Irish after an official request from the Conservation Federation that a wilderness area be established in the forest.

Finally, two Ozark Chapter volunteers who put in long, grueling hours at the Missouri Wilderness Coalition's command post have already been mentioned in this account: John Karel, who chairs the Sierra Club's National Wilderness Committee and heads the state park system in Missouri; and Greg Iffrig, who was honored at the chapter's annual dinner last November as the Outstanding Sierran of the Year for his "tireless effort on behalf of the Irish Wilderness."

SIERRA CLUB ANNUAL DINNER

The Sierra Club held its annual dinner on Saturday, May 5, in a spacious ballroom of the Sheraton-Palace Hotel in downtown San Francisco. Some 460 people gathered for the festivities, the culmination of a week of Club meetings and activities.

The yearly event is a chance "to celebrate being part of the Sierra Club," according to John Holtzclaw, chair of this year's Annual Dinner Committee. "Club members come together to have a good time and to fete the outgoing President," in this case Denny Shaffer, President for two consecutive terms.

Entertainer Lee Stetson, an actor who performs as John Muir throughout the Northwest, helped sustain the high-spirited atmosphere by gruffly censuring electrical companies for damming the rivers, and ad-

monishing outdoor enthusiasts who "hike" the wilderness rather than "strolling" as they once did.

Outstanding contributions by environmentalists were acknowledged that night by several awards. The Sierra Club's highest honor, the John Muir Award (given for a distinguished record of leadership in national conservation causes), went to former Club President Brant Calkin. Joe Fontaine, another former President, received the William E. Colby Award, the highest honor for service to the Club itself. The Ansel Adams Conservation Photography Award went to Galen Rowell, author of the recent Sierra Club Book *Mountains of the Middle Kingdom.*

Other awards presented this year included the Edgar Wayburn Award for contributions by a government official, which went to Sen. Paul Tsongas (D-Mass.); the William O. Douglas Award for legal achievement, which went to University of

Philip Adam

Lewis F. Clark, Honorary Vice-President, examines a copy of his recently completed oral history. Kathleen Goddard Jones, also a recipient of an oral history, and her husband Gaylord look on. Rebecca Falkenberry (bottom), Alabama Chapter Chair, presents a check for $1,400 to Vawter Parker of the Sierra Club Legal Defense Fund to help underwrite the cost of a lawsuit on the Alabama coast.

Philip Adam

Michigan law professor Joseph L. Sax; and the Walter A. Starr Award for continuing work by a former Sierra Club Director, which went to Ellen Winchester. Dick Simpson of the Loma Prieta Chapter, Lynda Shell of the Oklahoma Chapter, and Maurice J. Forrester of the Pennsylvania Chapter were awarded the Susan Miller Council Service awards. The Eastern Pennsylvania Group received the Denny and Ida Wilcher Award.

In addition to these yearly awards, former President Phil Berry presented his traditional tongue-in-cheek awards for contributions to the cause of conservation above and beyond the call of duty. Anne Gorsuch Burford and James Watt received the choicest Berrys.

The History Committee announced the addition of nine more oral-history interviews to a series begun in 1974. These personal narrations of Sierra Club history are transcribed from interviews with distin-

Philip Adam

Board member Betsy Barnett (above) presents the John Muir Award to Brant Calkin, past Sierra Club President and, until recently, New Mexico's Director of Natural Resources. John Muir (below) takes the "despoilers" to task in Lee Stetson's characterization of the Club's founder and first President.

Philip Adam

guished leaders in the environmental and conservation movements. This year's interviews included accounts by Executive Director Mike McCloskey and former President Lewis Clark, the latter a member of the Club for 56 years (36 of them on the Board of Directors).

NOMINATING COMMITTEE FOR BOARD OF DIRECTORS

The committee that will nominate candidates for the 1985–1988 Sierra Club Board of Directors encourages Club members to suggest potential candidates.

Members of the Nominating Committee this year include Jim Dockery (Chair), Winston-Salem, N.C.; John Embry, Louisville, Ky.; Calvin French, Upland, Calif.; Norman Gee, Santa Venetia, Calif.; Gloria Shone, Dallas, Texas; and Monica Walden, Austin, Texas.

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

Members are urged to send their suggestions before September 1, 1984, to Jim Dockery, Nominating Committee Chair, 1001 West Fourth Street, Winston-Salem, NC 29101.

CLUB OFFICERS

The Sierra Club Board of Directors elected officers for the coming year at its annual organizational meeting on May 5 and 6. Michele Perrault, a legal assistant from Lafayette, Calif., succeeds Denny Shaffer as President. She is the second woman to hold that position.

The Club's new Vice-President is Robert Howard, a physician and professor at the University of New Mexico Medical School. Sanford Tepfer, a biology professor from Eugene, Ore., was reelected Secretary, and Philip Hocker, an architect from Jackson Hole, Wyo., was reelected Treasurer. Trial attorney Lawrence Downing, from Oronoco, Minn., was elected Fifth Officer.

Special recognition was given to outgoing Board members Dick Fiddler, Marty Fluharty, Nicholas Robinson, and Denny Shaffer. Fluharty has been named to the Michigan Natural Resources Commission, and Robinson, who resigned from the Board in 1983, is now the Deputy Commissioner and General Counsel of the New York Department of Environmental Conservation. □

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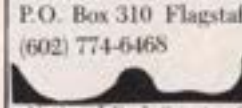

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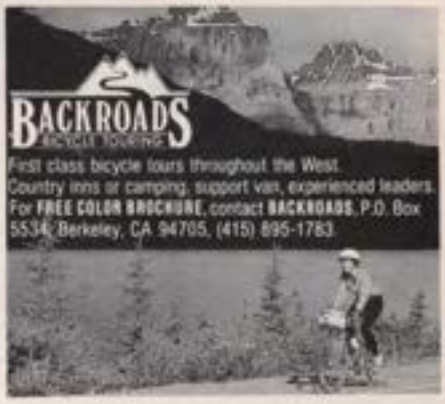

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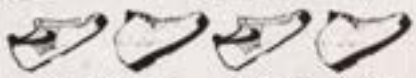

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QUESTIONS ? ANSWERS

Sierra encourages its readers to take this opportunity to learn more about the Sierra 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.

Q: I've written to my legislators on a number of occasions and have received only form letters in return. Is it really worthwhile to write to a senator or representative? (Leslie Short, Ypsilanti, Mich.)

A: Yes, absolutely. One-on-one correspondence establishes a direct link between you and your representative, and it's one of the best ways to guarantee that your opinions will be heard.

Doug Scott, Deputy Director of Conservation Affairs for the Sierra Club, explains that "even though each individual's effort might seem insignificant, taken together they are the reason that there are 80 million acres in the National Wilderness Preservation System, that there are national parks in Alaska, that there are no SSTs flying overhead, that there is a strong Clean Air Act, and so on. Intensive lobbying, useful as it may be, is not the most important source of the Club's influence. The fundamental reason for our success is the direct contact made by those of our members who care enough to take time to write to their representatives."

Letter-writers should be aware of certain guidelines that will ensure that their correspondence makes an impact. Letters should be constructive, reasonably brief, and personal. (Form letters and petitions, though they have their uses, sacrifice the element of direct appeal that can be so important.) The letter should be addressed properly, and the bill or issue under consideration should be identified as specifically as possible. Writers should concentrate on members of their own delegations and make sure their letters are timely; a letter received after action has already been taken on a bill is useless. Finally, don't berate your representative, no matter how strongly you feel about an issue; express yourself firmly, but politely.

Q: What work does the Sierra Club do on behalf of endangered species? (Sheila Bremner, Syracuse, N.Y.)

A: The protection of endangered species concerns the Sierra Club on a number of different levels. The Club is actively seeking reauthorization of the Endangered Species Act through its lobbying efforts in Washington, D.C. In addition, the Club's National Wildlife Committee recently decided to make the plight of endangered species a top priority for the coming year.

On a local level, individual chapters and groups continue to work for protection of threatened animals native to their respective districts. For example, a large amount of time, work, and money has been expended in the effort to save the California condor. Perhaps the Club's greatest contribution to endangered species is its ongoing effort to preserve and conserve the habitats in which many such species live.

Illustration by Rich Clyde

Q: I'm beginning to hear a lot about light pollution. Is it a real problem? (Sam Crawford, San Jose, Calif.)

A: It's a very real technical problem for astronomers, and a growing aesthetic problem for those of us who enjoy the spectacle of a starlit sky. A general deterioration in operating conditions now afflicts astronomical observers whose telescopes are situated in areas of urban and suburban sprawl. Metropolitan smog and the general widespread increase in artificial illumination associated with civic growth has had a negative effect on the quality of their photographs, because the spectral lines of mercury streetlights and neon signs are recorded along with the fainter spectral lines of the celestial body being photographed. Also, direct photographs are fogged during longer exposures.

Astronomers at California's Mt. Palomar Observatory have developed a plan to reduce the negative effects of light pollution. They suggest that outdoor lighting be pointed toward the ground or shaded so it does not shine uselessly and harmfully into the sky. They also encourage the use of low-sodium vapor bulbs for street lighting; these lights are essentially monochromatic and thus easily filtered. Despite the significant energy savings that low-sodium lighting would effect, utilities have shown little interest in converting their street-lighting systems or in encouraging the use of low-sodium bulbs by private and municipal lighting agencies.

Another group, the Astronomical League, has begun a campaign to encourage municipalities to reduce unessential lighting to improve viewing conditions during the March/April 1986 visit of Halley's Comet.

Q: I'd like to wear a perfume that doesn't destroy an animal either in its fabrication or its testing. What's a good source of information about this subject? (Becky Christensen, Ft. Worth, Texas)

A: Most cosmetics sold in the United States are tested on live animals prior to being placed on the consumer market. Rabbits, mice, and rats are most often used as subjects; cats, dogs, and primates are used less frequently.

One common test, the Draize eye test, calls for an animal (usually a rabbit) to be restrained as a cosmetic ingredient is dropped into one eye; the other eye is left untreated as a control. Any damage (e.g., redness, swelling, blistering) is recorded at designated intervals.

For a list of cosmetic companies that do not use animals in their testing—and for a list of the ones that do—contact the Animal Protection Institute (5894 South Land Park Drive, P.O. Box 22505, Sacramento, CA 95822; 916-422-1921).

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