NOVEMBER/DECEMBER 1979
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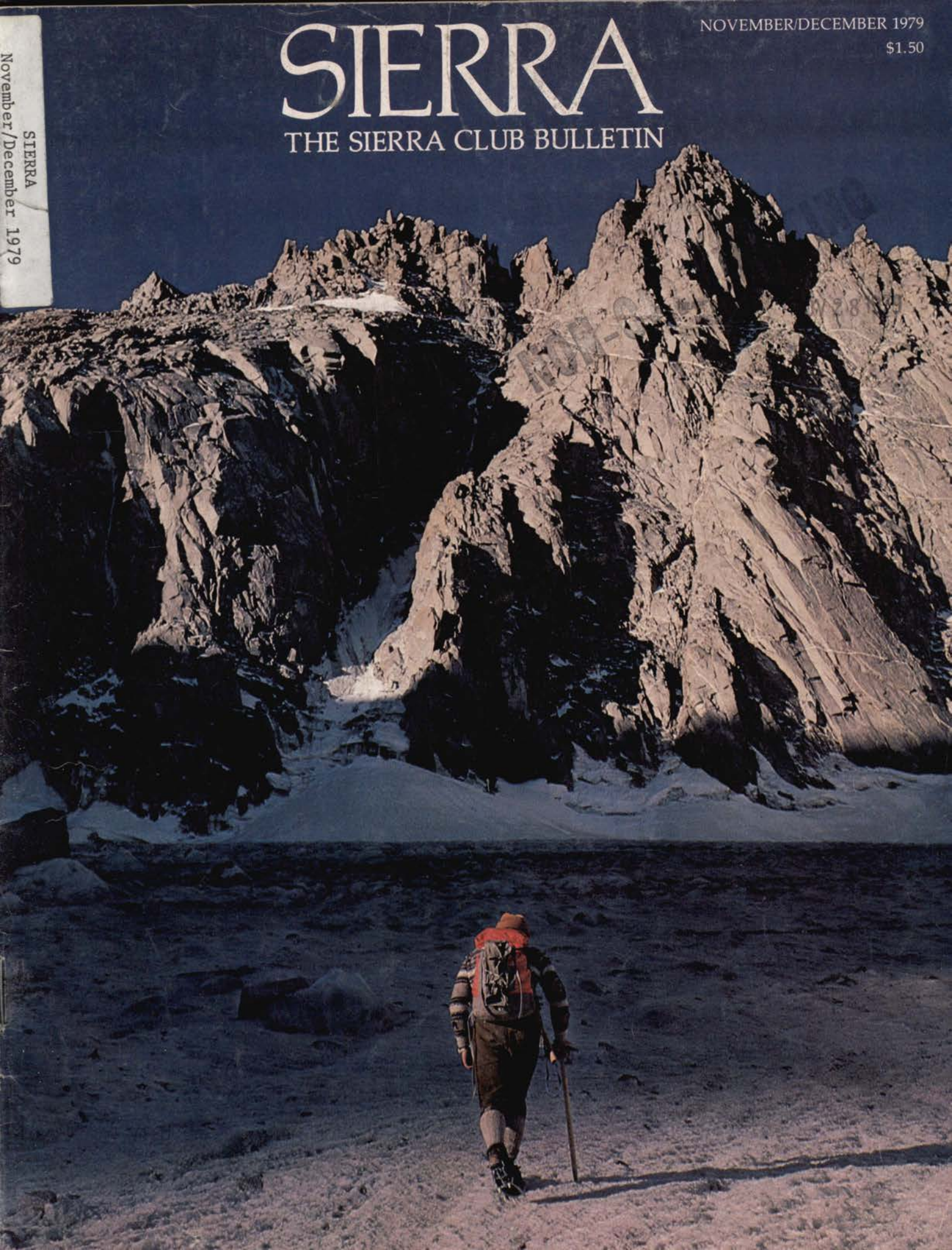
SIERRA

THE SIERRA CLUB BULLETIN



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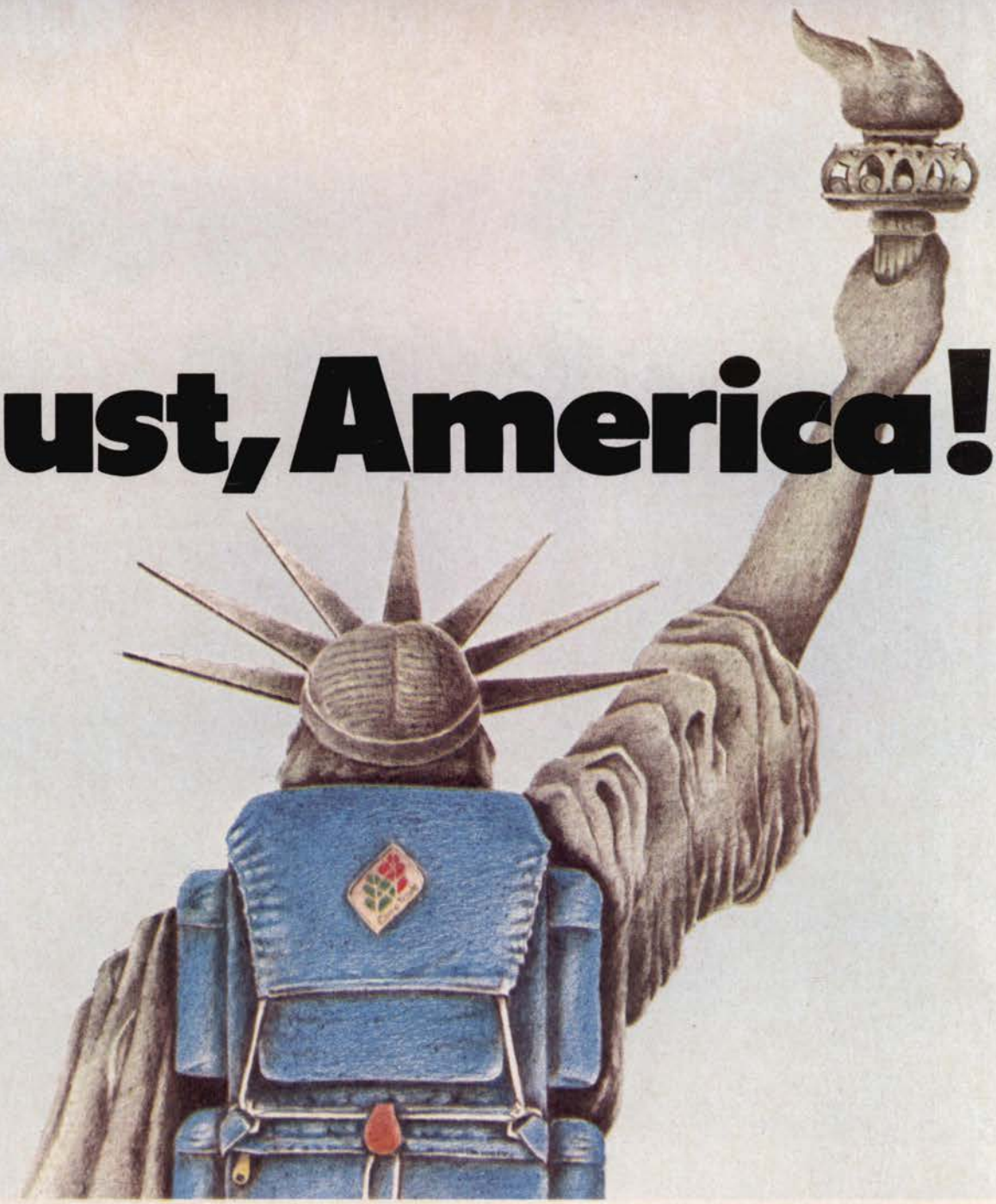

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Founded in 1892, the Sierra Club works in the United States and other countries to restore the quality of the natural environment and to maintain the integrity of ecosystems. Educating the public to understand and support these objectives is a basic part of the Club's program. All are invited to participate in its activities, which include programs to ". . . study, explore, and enjoy wildlands."

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Sierra (USPS 495-920) (ISSN 0161-7362), published bimonthly, is the official magazine of the Sierra Club, 530 Bush St., San Francisco, California 94108, (415) 981-8634. Annual Dues are $25 of which $3.00 is for subscription to *Sierra* (Nonmember subscription: one year $8.00; three years $20; foreign $12; single copy $1.50). Second-class postage paid at San Francisco, California, and additional mailing offices.

Change of address should be sent to Sierra Club Member Services, 530 Bush St., San Francisco, CA 94108. Along with your old and new addresses, please include an address label from a recent issue, if possible.

Editorial and business offices: 530 Bush Street, San Francisco, CA 94108. Unsolicited manuscripts must be accompanied by a stamped, self-addressed envelope.

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THE SIERRA CLUB BULLETIN

NOVEMBER/DECEMBER 1979 VOLUME 64/NUMBER 6

Cover: A climber walks across Palisade Glacier toward North Palisade, in California's Sierra Nevada. Photograph by Gordon Wiltsie.

Right People, Wrong Date

I am sure Horace Albright is a man of extraordinary abilities, which quality is conveyed by the interview with him in the September/October issue of *Sierra*; but even Mr. Albright could not be so extraordinary as to have guided Warren G. Harding around Yellowstone National Park in 1928, as the caption on page 34 says. President Harding died in 1923.

Jonathon Abarbanel
Chicago, Illinois

Divine Disposition

Readers of Ellen Winchester's article on nuclear waste disposal ("Nuclear Wastes," July/August) will be puzzled by her concluding remarks: "A thousand years ago, the finest architectural and engineering talents in the western world were mobilized to build cathedrals. It is ironic and disheartening that comparable talents and even more sophisticated skills must today be devoted to developing foolproof garbage dumps." Every environmentalist must regard the foolproof garbage dump as the most marvelous invention, from an environmental point of view, that anyone could devise.

A foolproof garbage dump would not only be a monument to human ingenuity, but having accomplished the feat of making something foolproof, it would require only a little more effort to make it aesthetically pleasing as well. In fact, a foolproof garbage dump might make a splendid site for a city or a park, or even for a lovely cathedral. A fitting name would be the Cathedral of the Divine Disposition.

More power and honor to the inventor of the foolproof garbage dump!

Lawrence Cranberg
Austin, Texas

Frieden and the Club

Judith Kunofsky's review of *The Environmental Protection Hustle* (July/August) is a classic testament in its own right, and a long-awaited indictment of Bernard Frieden's well-publicized but ill-considered book. MIT Press should salvage its reputation by reprinting Frieden's book with Kunofsky's reprisal for a preface.

It is an insult that Frieden's book should be published by an academic press with an otherwise impeccable reputation. The widespread attention that this immature polemic has received adds further insult. I am heartened to see the counterattack launched in *Sierra*, but let us not end it there.

I suggest that the Club begin now to set the record straight, and to do so in a manner that out-guns and out-classes the Frieden book. The Club needs to publish a rejoinder to *The Environmental Protection Hustle* based on the Kunofsky essay and supported by case studies of actual instances where urban development and environmental goals coincided.

All those Sierra Club members who have been personally involved in such cases must join this effort: If you, the reader, can assist us in refuting the Frieden thesis, please write in care of the address below; we will be looking for the success stories of environmentalists' participation in planning or development projects where the final product achieved not only a stable or improved ecosystem, but also additional economic opportunities or housing.

Frieden has "done us wrong," but he has also done us a favor: It is no longer enough merely to talk about urban issues within environmental forums, nor even to sponsor conferences such as City Care. Urban land-use issues must become the cutting edge of a new movement that will galvanize the Club and lead us in important new directions.

John Ashbaugh
535 Cuesta Pl.
Arroyo Grande, CA 93420

Correction

We regret that the credit lines for two photographs in the September/October issue were transposed. The lower photograph on page 10 was taken by Don Briggs, and the upper photo was taken by Tim Palmer.

Editorial

The Need for Perpetual Care

IN THE RUSH to find quick solutions to our energy dilemmas, basic problems can be too easily brushed aside. One of the most critical of these problems, the care of toxic wastes and contaminants, returns to haunt us again and again. This problem arises because society does not yet understand the full—and everlasting—cost of the oil, coal and other minerals we extract from the earth.

The price is not limited only to the direct costs of the mining process and of controlling the accompanying pollution. The biggest cost is incurred later, after the miners have left the site. A hidden crisis is building up in all sorts of obscure places: up old hollows in Appalachia, deep below the prairies of Texas, in the uranium fields of New Mexico and Wyoming, in the canyons of Colorado and the deserts of Arizona—every place where dangerous residues from various types of mining must be safeguarded forever. Who will watch these toxic wastes for thousands of years? Who will pay for perpetual surveillance? Should future generations be obliged to solve the problems we leave behind with hardly a thought?

Too many people assume the problem of long-lasting toxic wastes is limited to nuclear wastes. Unfortunately, though most people aren't aware of it, many forms of mining and drilling pose problems of continuing contamination.

Millions of holes have been drilled in connection with oil and uranium development. The seals on old oil wells last only for a century or so—but the danger posed by such holes persists much longer than that. Once the seals' linings corrode, pure aquifers located nearby may be contaminated by seepage from other formations. Exploratory bore holes, such as for uranium, pose a problem. If not cemented and plugged properly, contaminated waters (as with selenium) may migrate from one level to another, resulting in the pollution of groundwaters.

Abandoned deep mines pose essentially the same problem. Seals to prevent drainage of highly acidic water from underground coal mines in the East will last for only a few decades. They must then be repaired or replaced—or the acidic water will contaminate other water supplies. The same problem also exists in hundreds of old deep mines in the West—gold, silver, copper, lead, and others. Most of these minerals are located in sulfide formations that also produce acidic rain water. Most of the closed mines, of course, have not yet been sealed or treated at all to prevent acid drainage.

The immense open-pit operations for copper, molybdenum and uranium pose similar problems. Huge tailing ponds built to hold residues from ore milling now cover tens of thousands of acres. These residues are permeated with heavy metals and other toxic materials, including mercury, lead, cadmium, zinc, arsenic, cyanide, ammonia, acids and radium. These tailing ponds and their catchment dams are contained behind earthen dikes—not the sort of structure one associates with great permanence. (One just failed in New Mexico.) Yet these tailing ponds must last for all time. If they fail, buried toxic materials can be washed into streams. These materials may reach the environment even sooner if no impermeable liner is placed on the floor of the pond. This is more than a theoretical danger, unfortunately; there is reason to fear that aquifers south of Tucson may already be contaminated by substances that have leached from copper mine tailing ponds.

Proposals to develop synthetic fuel from oil shale and coal in the West have largely ignored the problems of perpetual management of the tremendous volume of wastes that would be generated. A full-scale oil shale industry—to take only one example—will produce more than 200 times as much waste as has been generated to date by America's entire mining industry. And spent shale waste is exceptionally rich in toxic organic compounds and salts. Some propose to store this waste above ground, behind dikes and retention dams, to prevent toxic chemicals from being leached out by rains to seriously pollute streams. These dikes will have to be maintained continuously to prevent leakage and deterioration, and dams below, that catch runoff, will have to be cleaned out periodically as they fill with sediment. (Incidentally, planned catchment dams may also be too small to contain runoff from major storms.)

Storage dams built only 50 years ago, such as Lake Eleanor in California's Sierra Nevada, are already leaking badly. Who is going to clean out such dams and keep them in good repair indefinitely? When we recall that some of these toxic wastes will remain dangerous to human health for tens of thousands of years—this becomes more than a question of janitorial maintenance. Who will come back 30 or 40 times to plug leaks, clean basins, and shore up crumbling dikes? If this is not done in Colorado's Piceance Basin, where the shale projects will be located, toxic materials will eventually reach the Colorado River—the great water source for the entire Southwest.

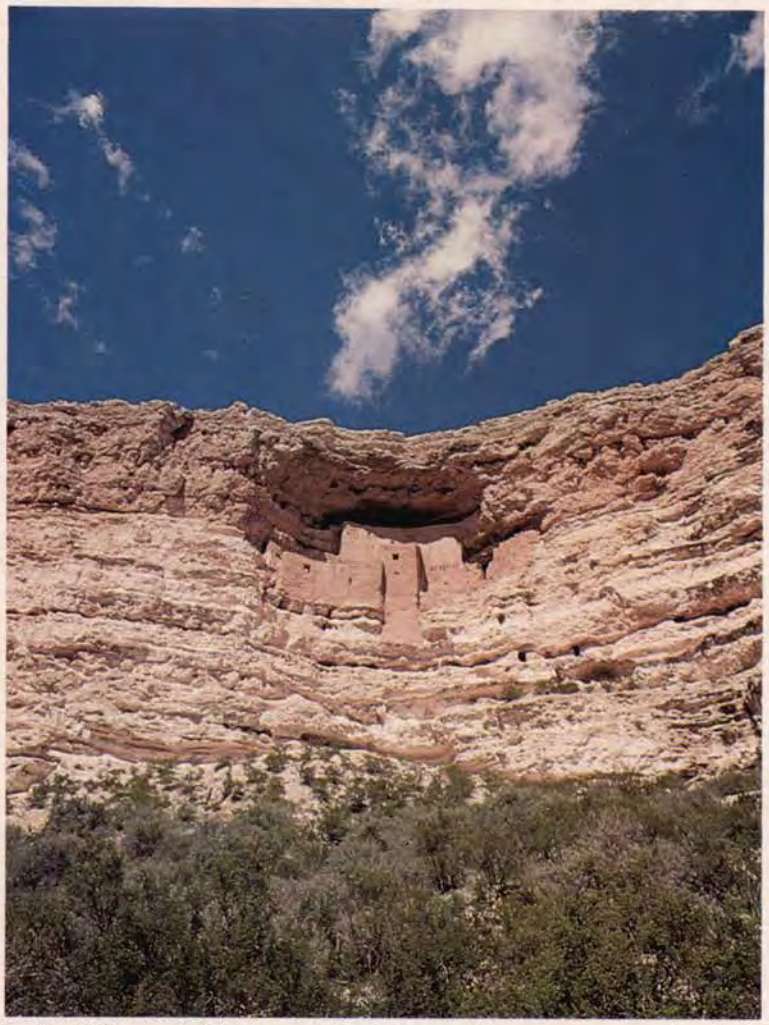
Some have suggested *in situ* development instead—moving the mining and retorting processes underground. But with *in situ* mining the leachate problem also moves underground. Toxic materials would contaminate any groundwater present, and such contaminated water could surface later in springs that feed stream systems. Furthermore, far less can be done underground to control the escape of leachate. Drainage wells can be drilled around the site, but then again the polluted water must be stored in dams that must be permanently maintained, and the wells must be permanently maintained.

We have dug ourselves into enough problems already. We certainly don't need more. Let's solve the problems of perpetual care associated with the mines we already have before we take on more.—*Michael McCloskey*

Paving Over the Past

TIM CHURCH

Doyen Salsig



The fancifully named "Montezuma's Castle," one of the most famous archaeological treasures of Verde Valley, in Arizona.

THE CULTURAL HERITAGE of America is being destroyed: paved, flooded, bulldozed and auctioned off—we are in danger of losing our unwritten history.

Testifying before the House Committee on Interior and Insular Affairs in 1973, Dr. Charles McGimsey III, president of the Society for American Archaeology, bluntly stated:

> Our heritage from the past lies buried in the ground, where it has accumulated for thousands of years. For the great majority of that period, this resource lay largely undisturbed . . . . The hundred years between A.D. 1900 and the year 2000 will see . . . the near-total destruction of the physical remains of the past of both the Indian and our own culture without any adequate record having been made, unless corrective action is taken now.

Not only are fossil remains and other archaeological resources in danger, but also the relics of earlier cultures and the sites of historic events. The March 1979 issue of *Parks and Conservation Magazine* has listed seven threatened fossil areas and nineteen historic buildings or sites. Included are the Goddard rocket launching field, imperiled by a subdivision; the historic Virginia City, Nevada, gold town, menaced by a new open-pit gold mine; a battlefield in Rhode Island where the only black unit of the American Revolution fought, to be paved over for an industrial park; and the starting point of Daniel Boone's Wilderness Road in Tennessee, to disappear beneath a planned development.

The archaeologist of today has been reduced to a first-aid technician, running to rescue site after site from immediate destruction. No longer can the archaeologist pick and choose among important sites and then devote considerable time to a thorough study. *Salvage* archaeology is the key word today.

It is not too late to preserve a large part of the unwritten record of our heritage.

Ken Warner

Wukoki Ruins at Wuptaki National Monument in Arizona. Some of the fragile ruins date back to the eleventh century.

Archaeologists are far less interested in artifacts *per se* than in the information about cultures they carry. To retrieve this information, excavation must be carefully controlled and each artifact's location meticulously noted. Only through such control can fragile objects be preserved and, more important, can we begin to understand how earlier peoples lived and worked. Ideally, not all sites will be excavated, nor even all of one site; this will give future scientists, with advanced techniques, the research opportunities they will need. Preserving enough archaeological material is not in itself much of a worry. There are, for example, more than 6000 recorded archaeological sites in Arizona's national forests, and, nationwide, the number of sites may exceed 385,000.

The care with which sites known to be significant are preserved and excavated is, however, crucial. In 1961 an Indian shell heap, or midden, was partially excavated on the coast of Maine. In it was found a small silver coin, at first thought to be English, but positively identified later as Viking and dating from about 1070 A.D. Maine officials, fearful of covetous treasure hunters, asked for federal protection for the site. Without special protection it might well be impossible to determine whether the coin is a "mistake" or the Vikings did indeed reach Maine, farther south than previously thought.

The possibility of Vikings on the northeastern coast of America or even farther south is one of the unsolved mysteries awaiting answers. How long have humans been in North America—20,000 years, or 50,000? What caused the disappearance of the Maya civilization, or of the Mound Builders? Why did the Anasazi Indians abandon their cliff dwellings? Did the Phoenicians arrive in America before Columbus? Did the Chinese? The Romans? We don't know, and the answers will be lost if archaeological sites continue to be demolished.

Harry Jarvis

Petroglyphs, stone postcards from prehistoric times, are among our most precious archaeological remains. These are in Utah's Indian Creek State Park. Note the foot-like figures—with six toes.

Congress recognized the problem, as early as the turn of the century. The 1906 Federal Antiquities Act requires that permits be obtained before any excavation takes place on federal land, and fines of $500 and/or 90-day jail terms were set as punishment for offenders. Further legislation was passed in the Historic Sites Act of 1935, the Historic Preservation Act of 1966, the Dam Sites Act of 1960, the National Environmental Policy Act, the Moss-Bennett Archaeological Salvage Bill of 1974, and in Executive Order 11593-1971. Added to this seemingly impressive array of federal protective measures are the state laws that set down further restrictions. But have those laws protected our cultural resources? Look at the evidence of the last ten years.

- In Virginia, relic hunters frequently sneak into Fredericksburg National Military Park to dig. As chief Ranger Charles Wyatt says, "They're not digging a few bullets, they're literally tearing the pages from our history books." Looters have made off with whole cannons.
- The *Detroit News* of February 21, 1971, ran an ad reading: "140 acres, historical Indian ground, stone carvings, lore, artifacts. Adjoins . . . Michigan's only known petroglyph site. *Top notch land development.*"
- A landowner in Texas donated the site containing the ruins of an early Spanish mission to a town for preservation and development. On a sunny weekend the townspeople gathered at the site and, with county equipment, bulldozed the ruins to the ground. After the mission had been razed and the bricks stacked, they were ready to design and construct a "genuine" Spanish mission.
- The extreme southwestern corner of New Mexico is rich in the pueblo remains of what is known as the Mimbres culture. Its people achieved a high level of expertise in ceramics. The distinctive black-on-white, naturalistic designs are one of the peaks of the ancient art. It's because this pottery is so beautiful that the region has been likened to a "shell-pocked World War I battlefield"; pothunters using bulldozers and front-end loaders have reduced the number of intact Mimbres sites from 110 to 10 in a little more than a decade. The illegally obtained pots sell for as much as $15,000, and state archaeologists estimate that pothunting constitutes a $2-million-a-year business in New Mexico.
- A Bureau of Land Management archaeologist in Arizona tells of talking to Boy Scouts who earned merit badges by digging up artifacts. The site upon which this same archaeologist had based his graduate thesis was damaged by a Cub Scout leader.
- Motorcyclists and off-road-vehicle drivers frequently damage sites by racing over them, and by "jumping the mounds." An archaeologist excavating at Mesa Grande in Arizona complained of dirt bikers who sped through the site dodging holes, equipment and people while his crew was at work. Each year large motorcycle races sweep over areas of the Southwest, destroying not only vegetation but archaeological sites as well.
- Scattered across the Great Plains are a few "medicine wheels"—large circles of rock with "spokes" radiating from the center. Only in the past few years has their possible astronomical significance been investigated. Some scientists now believe they were constructed for the same purpose as was Stonehenge, in England—as a celestial calendar marking the winter and summer solstices. One of the largest wheels lies on Montana's eastern prairie. Its nomination for the National Historic Registry, which would insure preservation, was withdrawn after some of the wheel's stones were hauled away and used by coal surveyers to prop up survey stakes. An elderly property-owner in western Montana told of returning home after a month's absence to find a building gone; it was part of an 1880s stagecoach station on her land, and it had vanished—wood, nails, everything.

In salvage operations, the archaeologist has three perennial needs—sufficient time, money and personnel. Surveying large areas is a time-consuming process. Trained personnel have to walk over the whole area with eyes to the ground. Excavation, particularly of large sites, can cost tens of thousands of dollars and take months or years. Yet the archaeologist is forced to work at top speed, and to decide which locations will be studied and which will have to be neglected. Federal projects and large corporations can provide both money and personnel, but for the local contractor or lumberman the costs are unbearable, and frequently the whole process is ignored.

Penny-pinching agencies and legislatures can be very reluctant to provide money for digging up some "Indian stuff." Twelve states have no funding for research, 22 states spend less than $1000 per year and, of the sixteen that allot money, only 6 have what are considered adequate programs. An archaeologist for the state of Oklahoma, relating his problems before the House Interior Committee in 1974, said:

> . . . we in Oklahoma have had little means to salvage or preserve even the most important of these adversely affected archaeological sites. The agencies responsible for such destruction have provided little to no financial assistance to us to see that their projects have minimum effect on these resources. When asked for financial aid, these agencies have consistently fallen back on the claim that they had no authorization to spend monies on archaeological surveys or salvage.

One scientist stated in testimony that on the average only 3% of archaeological

sites are excavated before they are destroyed. Such losses include the area once inhabited by "Marmes Man" in Washington, one of the oldest settlements in North America. It was flooded by Monumental Dam on the nearby Palouse River. Archaeologists optimistically laid plastic sheeting over the site before the dam was closed in hopes of preserving the remains for future scientists. And the Amistad Reservoir in Texas flooded some of the earliest examples of pictographs as well as railroad tunnels and construction camps dating back to the initial laying of the Southern Pacific Railroad.

However, in 1974 the Moss-Bennett Archaeological Salvage Act passed, directing federal agencies to provide funds for adequate archaeological investigation at sites of projects funded with federal money. It hasn't solved the problem, but it has helped.

Even those agencies charged with preservation of archaeological resources sometimes add to the problem. The New York Archaeological Council faced an unlikely opponent when the State Historic Preservation Officer (SHPO), contrary to Environmental Protection Agency guidelines, approved 28 sewer projects without any field investigations whatsoever, despite evidence that the projects would disturb or destroy historic or archaeological sites. Unable to convince the SHPO of the mistake, the New York Archaeological Council took the case to court in 1975, bringing suit not only against the SHPO, but also against the EPA and eleven local governments in New York. It is still in the courts today.

As for the pothunter, things never were better. Although the 1906 Federal Antiquities Act and state laws provide for fines and jail terms, the laws rarely have been enforced and, when they are, culprits rarely are convicted. In one such case, *U.S. v. Diaz*, the 1906 act was declared vague and unconstitutional. That ruling has thwarted several subsequent prosecutions. In 1975 the U.S. attorney for Oregon declined to prosecute two violations of the 1906 act because he felt they were of little import and because the *Diaz* ruling made conviction unlikely. In May 1979, on the other hand, the Tenth Circuit Court upheld the 1906 act.

Just finding the pothunter requires a great deal of luck. The U.S. Forest Service and the Bureau of Land Management have vast acreages to protect, but are woefully short of people and funds for this.

Unlike the stopgap approach taken up until now, a comprehensive body of regulations and definitions should be initiated to streamline the steps required of projects and to ensure adequate funding. As for the pothunter, stiffer penalties should be introduced and enforced, especially for the bulldozing looters. With all relevant issues addressed in a single set of regulations, industry, government, private citizens and archaeologists could spend less time filling out forms and more time protecting our history.

However, statistics do not bode well:

- An estimated 700 unique archaeological sites are being destroyed *each year* on federal lands in California.
- Of the known sites on Hawaii's Oahu Island, 65% have disappeared, most in the last ten years.
- Of 45 major sites known in Oregon in 1950, one is left undisturbed and nine others are partially intact.
- In Arkansas, 25% of the sites have been destroyed in the last ten years.
- The antiquities-rich Columbia River area is now 90% underwater or otherwise damaged.
- Of the known sites in Massachusetts, 37% are completely or partly obliterated.

Yet it's not too late to preserve a large part of the unwritten record of our heritage. Though much has been lost, every site saved is one more puzzle piece retrieved, a part of our history kept intact. □

Tim Church is a free-lance writer specializing in science and the outdoors.

Backpackers and Archaeology

While the overall impact of hiking on archaeological sites remains small, conscientious hikers avoid doing damage by learning how easily it can be done. Evidence of archaeological sites varies from obvious stone or adobe walls to tiny flakes and chips scattered across the ground. Everything should be left as it is, because isolated finds on the ground might indicate a buried site: removing them makes later exploration difficult. Refrain from moving any object; if you must pick one up to admire its craftsmanship, be sure to replace it exactly where you found it.

Pictographs (rock paintings) and petroglyphs (rock carvings) are eminently photographable, but they are also very fragile—do not use chalk to outline the figures, and do not splash water on them.

Never use an old cabin as a source of firewood or make it your wilderness home. Paleontological (fossil) areas should be left undisturbed; never take souvenirs home unless it is specifically allowed. Authorities in Arizona's Petrified Forest National Park were forced to start inspecting cars because an estimated 12 *tons* of the petrified wood were being taken each year.

All artifacts found should be reported, especially those in imminent danger of destruction. Take time at the end of your hike to point out your find to a ranger.

Any persons observed illegally digging for artifacts should be reported; they are as much despoilers of wilderness as are stripmines.

The old maxim is still a good one—take nothing but photographs and leave nothing but footprints.

1979 Action

In February, Congressman Morris Udall and Senator Pete Domenici introduced the Archaeological Resources Protection Act. The act's important provisions include:

- A definition of "archaeological resource" as "any material remains of past human life or activities which are at least 50 years of age and which are of archaeological interest."
- A permit for excavation is to be given when the applicant is qualified, the activity is for the purpose of furthering archaeological knowledge, and the excavated material and data will be housed in an appropriate institution. No one convicted under the 1906 act or the 1979 act will be allowed a permit.
- Persons convicted of violations face criminal penalties of up to five years imprisonment and fines of up to $100,000, plus civil damages of up to two times the amount of the cost of repair and restoration of the site.
- Rewards of up to $2500 are to be given to those who report looters.

The bill is intended to halt the looting on public lands and the illegal trafficking in illicitly obtained artifacts. It is basically a criminal statute. Its passage last month is a step forward, but it is not a comprehensive solution.

The San Juan Basin Will Be Exploited—Yet, With Precautions, the Impact on Archaeological Remains Could Be Kept to a Minimum

The Archaeological Wonders of Chaco Canyon

MICHAEL GARDNER

FEW PEOPLE aside from professional archaeologists and inveterate amateurs are familiar with Chaco Canyon National Monument, in northwestern New Mexico. Last year only 42,000 people ventured across the 20 miles of rugged dirt road to see the magnificent cliff dwellings in the canyon. But when news of the significance of Chaco Canyon and its prehistoric culture gets out, all that will change. Chaco is one of the most significant archaeological sites in North America.

Until recently, northwestern New Mexico's desolate, windburned plateau country was thought worthless except by the few Navaho who manage somehow to graze sheep on the scant, marginally nourishing vegetation. But today it is known that the San Juan Basin, the geographical area that encompasses Chaco Canyon, also contains one sixth of the world's supply of uranium and one fourth of our nation's strippable coal. Exploitation of the basin's resources will be so intense that many archaeologists and National Park Service officials are deeply concerned. Although Chaco Canyon itself appears to be adequately protected by federal law from direct impact, the black coal that seems to ooze from exposed strata and the rich veins of uranium beneath the monumental ruins must be tempting indeed to the energy concerns that are drawn to the area. Milford Fletcher, southwest regional biologist for the Park Service, shook his head when asked about the future of Chaco, saying, "The energy companies ask us how we want Chaco, on a pedestal or in a pit."

Existing law should prevent direct energy-resource exploitation (and the consequent destruction of the ruins) within monument boundaries. However, recent findings indicate that archaeological remains of the ancient Chacoan culture are not all found in one place. In fact, they are spread over an area the size of Belgium! "What we've got here," said Brian McHugh, chief ranger at Chaco Canyon National Monument, "are fourteen large pueblos and more than 2400 surveyed archaeological sites within the monument boundaries. But when you think this civilization also included Lowry Ruin, and possibly the Zuni and Fort Wingate sites as well as Salmon Ruin and Aztec Ruin—it's just incredible. As soon as we find a new site there are roads connecting it with others. It's getting eerie!" The 30-foot-wide roads (by comparison, a modern, two-lane highway is 24 feet wide) radiate like spokes from Chaco to innumerable smaller outlying settlements in the San Juan Basin. In the last year alone, 72 significant sites have been found. Thirty-four of these scattered ruins were major cities, colonial outposts of the Chacoan system. And linking them together are the only known prehistoric roads north of the Valley of Mexico.

To date, only 5.9% of the San Juan Basin has been surveyed archaeologically, yet in that small area 16,000 sites have been discovered, dating from Paleolithic to contemporary Navaho times. When the entire basin is surveyed, archaeologists expect to find about a quarter of a million sites. This is the richest and most threatened archaeological resource in the United States. Many of the unexcavated sites in the San Juan Basin are not only archaeological treasures but sacred, living shrines for the Indians of the region. The sites embody the history of the Indians of the Southwest; their destruction would be a monstrous loss of Native American heritage.

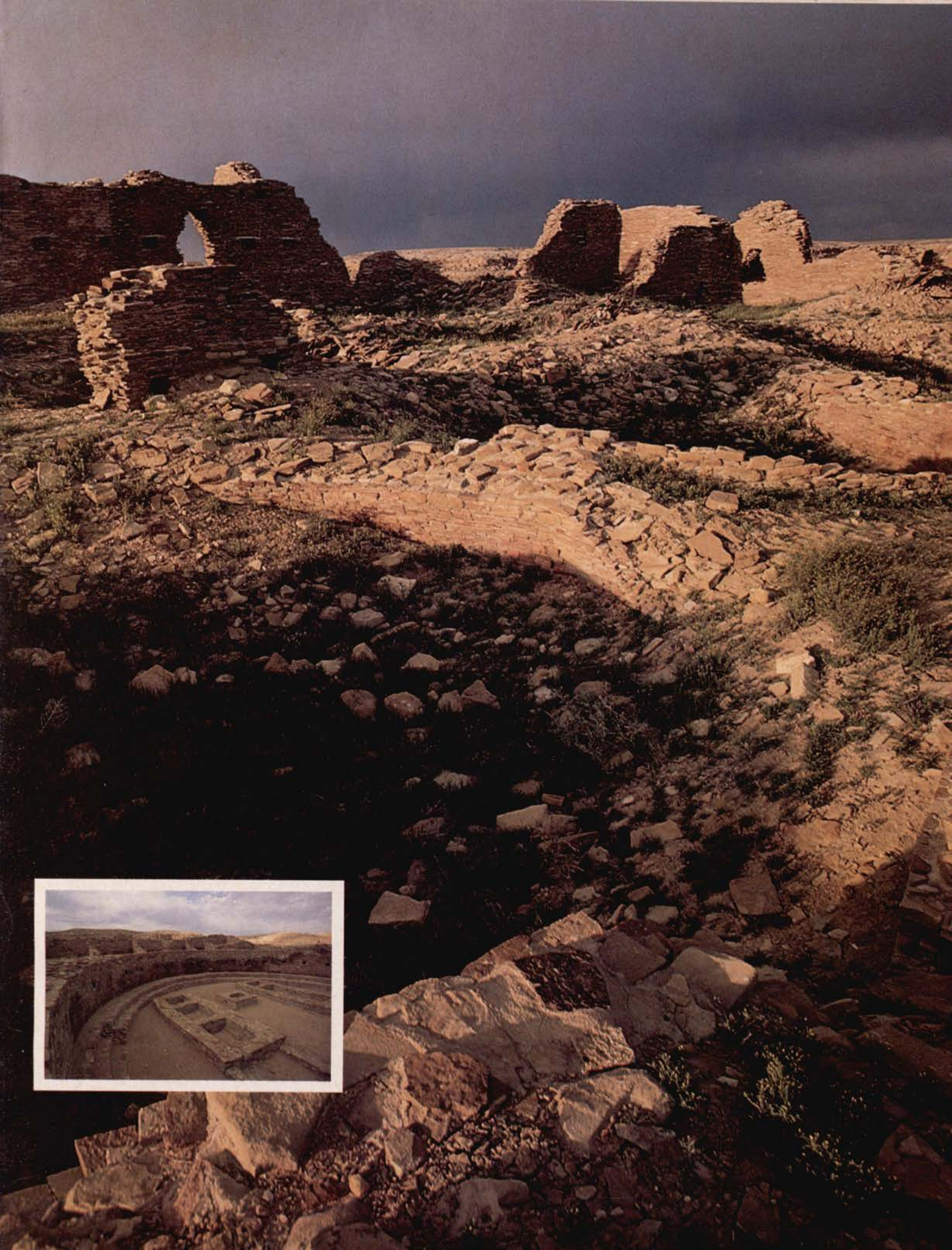
Sites on federal or Indian land may be preserved from exploitation, but the ruins on private land will most likely be destroyed, since there is no adequate legislation to protect them. Coal companies can strip the sites, uranium companies will drill through them and professional scavengers will bulldoze them for the valuable artifacts left by prehistoric inhabitants. Fortunately, one of the most fragile and spectacular examples of Chacoan culture is already a national monument.

Although archaeologists have only recently realized the extent and complexity of the Chacoan culture, Chaco Canyon has attracted visitors and archaeologists for more than 100 years. The Spanish put Chaco Canyon on early maps, apparently deriving the name from a mispronounced Navaho word, "tse koh," meaning rock canyon. It wasn't until 1849, however, that the first topographic engineer, Lieutenant James H. Simpson, set foot in the canyon. His guide, a Mexican named Carravahal, knew the names of a few of the ruins (such as the impressive Pueblo Bonito) and, not wishing to show his ignorance, made up names—many still used today—for the other major ruins.

The first serious attempt at excavation was undertaken by the Hyde Exploring Expedition. Led by George Pepper and assisted by Richard Wetherill, the controversial discoverer of Mesa Verde, the expedition excavated Pueblo Bonito from 1896 to 1900. Wetherill became intrigued by Chaco Canyon; he stayed on and built a trading post at Pueblo Bonito, using ponderosa pine roof beams taken from the ruin. For twelve years he lectured on Chaco, sold pots and jewelry to

Opposite: *High on Chacra Mesa is Penasco Blanco, a major unexcavated ruin.* ***Inset:*** *the Great Kiva—a religious structure—at Pueblo Bonito.*

Photographs by Stewart M. Green



interested collectors and peddled goods to the Navahos. Wetherill was shot and killed in 1910 near Casa Chiquita during a trade dispute with a Navaho named Chischiling Begay. His still-visible grave lies west of Pueblo Bonito. After Wetherill's death the validity of his claim to the canyon was challenged, and soon thereafter his widow abandoned the trading post.

After the Hyde expedition, George Pepper continued to work at Chaco for the American Museum of Natural History. His professional work and published findings excited the public and other archaeologists and were instrumental in having Chaco Canyon designated a national monument on March 11, 1907. During the past 70 years, the monument's 21,500 acres have been explored by a variety of institutions, such as the National Geographic Society, the School of American Research and the University of New Mexico.

Today, a visitor driving the rutted dirt road that leads to Chaco may wonder how this desert wash could have supported a complex civilization with a 1200-mile trade network connecting more than 70 smaller cities and towns. Why build at Chaco, where there is so little water, no trees except one struggling cottonwood and practically no valuable material resources such as turquoise? Archaeologists once thought that when Chaco was reaching its prime, in the middle of the tenth century, the climate was significantly different—cooler and wetter. Chacoans then, so the theory goes, lived in a vast but northerly-retreating ponderosa forest. This theory accounts for the presence of the more than 150,000 ponderosa trees that were used for building. It could also account for the numerous turkey, bison, sheep and bear bones found in the ruins.

But as archaeologists know only too well, answers are seldom so convenient. Recent research on pollen and tree rings indicates Chaco has always been arid and hot, and the Chaco River that meanders through the canyon was frequently dry. "No, there definitely was no forest here; our pollen and float samples don't indicate it . . . . And we now know there were no ponderosas here before the Bonito phase," said Cory Breternitz, one of the young archaeologists working at Pueblo Alto, Chaco's most recent excavation. It is now believed the Chacoans carried these great logs from the San Juan Mountains in southern Colorado on their 30-foot-wide roads. Using these logs and locally quarried sandstone, a series of well-engineered and meticulously constructed cities were built along the north wall of the canyon. Pueblo Bonito, the largest pueblo, was built in a great semicircle with some of its banded masonry walls rising to five stories.

Until 1882 (when a larger building was completed in New York City) Bonito, with its more than 800 rooms, was the largest masonry "apartment house" in North America. The rapid, almost fevered construction of these towns, including Chettro Kettle, Pueblo del Arroyo, Wijiji and Penasco Blanco, constitutes a classic period known as the Bonito phase of Chacoan culture. Archaeologists can readily trace the evolution of cultural patterns in Chaco Canyon beginning more than 7000 years ago. But beginning in about 1050 there was an almost explosive development of towns and villages, roads, water-control systems and a trade network that extended into the heart of the contemporary Toltec civilization in Mexico; archaeologists can only shake their heads, postulate unproven theories for the sudden development, and admit they don't understand it. "One of the things making Chaco so unique is that you don't see an evolution of masonry styles. It's amazing: all of a sudden, *boom*—you have these cities that even in concept are completely different from the smaller sites," says Breternitz.

At one time perhaps 6000 people lived in the canyon. The clamor of turkeys, macaws from Guatemala, parrots from Mexico and the citizens' own industrious bustling must have filled the canyon with noise and life; the hauntingly stark ruins of today are in powerful counterpoint. On a given day, armies of builders would once have been erecting walls, chopping steps up the steep cliffs and constructing the amazingly sophisticated water-control system that trapped water from sudden summer rains as it gushed down the many side canyons. A communication network connecting each town with at least two others within sight would have heralded ceremonial processions or trade caravans coming to Chaco, the great center.

The large ceremonial structures known as Great Kivas could have united entire communities in religious celebration. And at night, the Chacoans watched the stars, plotted their movements and built pueblos to stand in rhythmic relationship to the sun and heavens. Because of the great number of kivas and the special care given to their construction, archaeologists now believe the priests were a ruling class. It's difficult to conceive of the labor invested in walls and plazas and in construction of the road system without positing a formal, stratified organization to support the construction specialists.

The social structure must have suffered a gradual breakdown as people left the cities, which were largely abandoned by 1200 A.D. Why they left and where they went is a topic of constant speculation among southwestern archaeologists. At first it was thought the people simply

Opposite: Hungo Pavi, another major unexcavated city along the Chaco Wash. In the background is Fajada Butte.

Thieves of History

BRANT CALKIN

Stealing our past is not only an amateur occupation carried out by a few in a localized area. Raiding archaeological ruins is a large business involving heavy equipment, surveillance, organized security and marketing. The investment in earth-moving equipment, trucks and labor is substantial, and the professional thieves move their operation from site to site over distances of hundreds of miles. One piece of heavy equipment has been traced by its serial number from its Arizona owner to an illicit dig in the Mimbres area of New Mexico to illegal operations in southern Utah. Given the magnitude and pervasiveness of the destruction, it is shameful that, in southern Utah, the Bureau of Land Management is cutting back on staff and money for archaeological resource protection. At a time when the agency should be building a sophisticated strike-force to pursue thieves and hunt them from state to state, the agency is actually retreating. If the BLM can expedite wilderness studies for the convenience of oil companies; if it can accelerate power-line-corridor studies; if it can find money for irrelevant studies to mollify ranchers—and the BLM does all these things—then why can't it keep even the previous inadequate level of funding against a growing army of vandals? This is a situation that must be addressed.

Brant Calkin is the Club's representative in the Southwest.

and mysteriously vanished, but later studies suggested they were driven from their cities by fierce, marauding Athabascan Indians migrating from the north. Contemporary archaeologists, after decades of painstaking work, are still not sure what happened, but they do know a variety of factors conspired to make Chaco Canyon an increasingly difficult place to live. There are records of numerous small droughts, and some say a deciding factor was a change in the pattern of precipitation. For the Chacoans to grow their crops of corn, beans and squash, moisture had to arrive at the proper time. Winter snows that melted slowly, moistening the soil and feeding the springs, were ideal. But sometime around 1000 A.D. the pattern changed, and most of the area's moisture came instead from summer storms. The desert soil, probably stripped of most of its natural vegetation by the Chacoans, would have let the precipitation run off, carrying away the precious topsoil and carving deep arroyos. The result: loss of up to 50% of the available arable land. The water the inhabitants captured with their ingenious dams added so much alkali and other salts to their soil over the years there must have been a progressive reduction of crop yield, further encouraging the Chacoans to move elsewhere. They were long gone by the time the Navahos first came upon the ruins of their cities and called the former inhabitants "Anasazi," meaning "the ancient ones."

Today, almost a thousand years after the Chacoans built the great cities and basked in their glory, another civilization dreams of provisioning its cities by exploiting the vast energy reserves in the San Juan Basin. "When the energy companies get through here there is not going to be much left. Sure, they say they will irrigate and reclaim the land. I just hope they guarantee that the land will be rehabilitated, I don't care if it takes 30 years," said Walter Herriman, superintendent at Chaco Canyon National Monument. Herriman's concern is shared by others in the National Park Service who are, however, resigned to the fact that the San Juan Basin will be exploited for its energy reserves. But the Park Service must obey its mandate to protect the areas under its jurisdiction; it is now in the process of setting up safeguards. The agency is gathering base data on the basin so that, if a future court case requires proof of current conditions, the information will be available.

One of the many threats to Chaco and the region will be air pollution. As many as 6 new power plants, 60 uranium mines and 15 uranium mills could be operating there by 1990. These developments will not only cause visible pollution; emissions containing sulphides and oxides of nitrogen could combine with rain and other moisture to produce an acid combination that would slowly eat away at the ruins, a process already affecting others around the world. The power companies have assured the monument's staff that acid rain would not affect the cultural material at Chaco, but Keith Yarborough, who supervises air-quality monitoring at Chaco for the Park Service, is not convinced. "Sure, they say the rains will have no effect, but look at what happened to the Acropolis. Although the situations aren't identical—the Acropolis is in a Mediterranean climate and Chaco is in a desert—the example shouldn't be overlooked," said Yarborough.

The Environmental Protection Agency has begun researching ways to determine accurately any changes in the Southwest's air quality. Funds have already been allocated for the project, and the Chaco area is of prime consideration now that the importance of its prehistoric civilization has become known. Preserving air quality there would be considerably easier if Chaco were a national park or designated wilderness and so qualified for Class I air. But it is only a monument and, by regulations enforcing the Clean Air Act, has a Class II designation that, over time, will allow a gradual increase of emissions in the area. "Eventually, Chaco could look like New Jersey," said McHugh. The Park Service has recommended redesignation to Class I air, but the final decision must be made by either the state of New Mexico or federal legislation. Many Park Service officials are candidly pessimistic about redesignation: The consensus is that the region's energy reserves are too great not to be developed.

Mining operations have begun on the very boundaries of Chaco Canyon. Monument advocates are concerned lest the blasting disturb Chaco's fragile ruins and add to the expense of their stabilization, already more than 25% of the monument's annual budget. Once the coal has been mined it must be transported, and there are plans to construct a railway from Star Lake to Bisti, passing within three miles of the monument. Walter Herriman said, "The coal companies will blast from three to six miles away, and we're not sure what effect those

blasts will have on the monument, but we're taking no chances—we're setting up a seismic monitoring system." Such monitoring could well discourage blasting that's too strong for the monument or too near. But there will be no recovering the loss of priceless archaeological information as railways cut through prehistoric roads and as the land of the San Juan Basin, dense with ruins, is stripped of its heritage as well as its coal.

Although such threats to Chaco seem formidable, they aren't what worry the archaeologists or the park administration most. The answer to the mystery of the Chacoan culture lies outside its boundaries, on land soon to be stripmined for coal or drilled for uranium. "The discovery of the roads and outliers has opened a Pandora's box of Chacoan history," said McHugh. "We now know that a fantastic wealth of information lies outside the monument boundaries. With the help and cooperation of the coal and uranium companies, it could be protected."

Some of the large coal and uranium companies are beginning to realize they have at least a legal responsibility to protect the cultural resources of this area. The Phillips Petroleum Company, at its Nose Rock mine, has placed a building over a recently discovered site and, further, plans to hire an archaeologist to excavate it. Tucson Gas and Electric has decided for a variety of reasons not to stripmine Bisa'ani, a major Chacoan settlement. In fact, the utility company plans to stabilize the ruin, a process that could cost millions of dollars. Mobil Oil, which has uranium holdings around Crownpoint, has been unusually receptive to the needs of the Park Service and the cultural resources of the San Juan Basin. Dan Hurley of Mobil Oil won New Mexico's State Historical Preservation Award last year for his pioneering work in preserving sites.

It's unfortunate that all the companies involved, especially those operating on private land, are not so enlightened; the cumulative impact of mining activities on the prehistoric sites of the San Juan Basin promises to be staggering. The Park Service knows this, and knows it must remain firm to prevent precedents being set in the San Juan Basin that could one day prove detrimental to other parks. "In the next 50 years, the national parks may well be exploited for 'reasonable' reasons," said McHugh, "and Chaco could easily be the first. The 'reasonable' reason now is energy. What is threatened is the *idea* of an inviolate place. Either a park is a sacred place or it isn't—that's a choice we have to make." Yet each day more sites are found that should be protected because, in a sense, they too are sacred places, many the cherished shrines of contemporary Indians.

In order to protect newly discovered sites outside its immediate jurisdiction, the Park Service is attempting a rather unconventional approach to preservation without acquisition. James Judge, the archaeologist who heads the Park Service's Chaco Center, calls it a form of archaeological easement. He is quick to point out, however, that even if all parties (mining interests, the state and federal governments, and the Navaho tribe on whose land many of the finds are being made) were in agreement that these sites should be identified and protected, there would still be problems. How would the sites be located, and who would manage them, and where and how could the boundaries of this prehistoric system be drawn without digging it up and destroying it?

Ironically, the more the situation is publicized, the more the ruins will suffer, at least under present legislation. "It is the *indirect* effects of uranium and coal mining that potentially pose the greatest problem of all for the Chacoan system," said archaeologist Ted Birkedal. "With increased mining, the population of the area will grow, more roads will run to formerly desolate reaches and, consequently, a greater number of ruins will be vandalized. Until we get laws with more teeth in them there's not much we can do." Few pot hunters realize that when they sift through a site they effectively destroy it. How can they know whether the site they are about to wreck holds an invaluable key to the Chacoan culture?

Today the visitor at Chaco Canyon National Monument enjoys virtually unlimited access to the ruins, and with a simple backcountry permit can wander on Chacra Mesa among the yet undug, largely undisturbed cities. There are no crowds to contend with and no urban haze to foul the view—only the visitor and the untold story of one of the greatest and most sophisticated prehistoric civilizations in North America. Once again it is becoming a great center—this time a center of conflict between energy needs and cultural preservation—but it is also a challenge, an opportunity to save instead of destroy what we don't yet understand. □

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The Roadless Areas of the West Are Being Mapped

Deciding the Future of BLM

Photographs by Trygve P. Steen

JOHN HART

IT IS DECISION TIME for western wilderness. From the saguaros of Arizona to the sagebrush of Idaho, from the Last Chance Range of California to the Alvord Basin of Oregon, the roadless areas of the desert are being mapped for the first time, given boundaries and numbers, and fed into a process that will eventually decide their future.

Their planner and manager is the Bureau of Land Management (BLM). Still the least-known of the four federal agencies that hold the bulk of America's public land, the BLM has the largest empire of all: 174 million acres, most of it arid, in the eleven contiguous western states, and more than that much in Alaska. Of this land, a large percentage—we still don't know how much—is wild and could someday qualify as units of the National Wilderness Preservation System. Oddly, though, the BLM wasn't even mentioned in the Wilderness Act of 1964. Only in 1976, with the Federal Lands Policy and Management Act, did Congress put the BLM into the wilderness business.

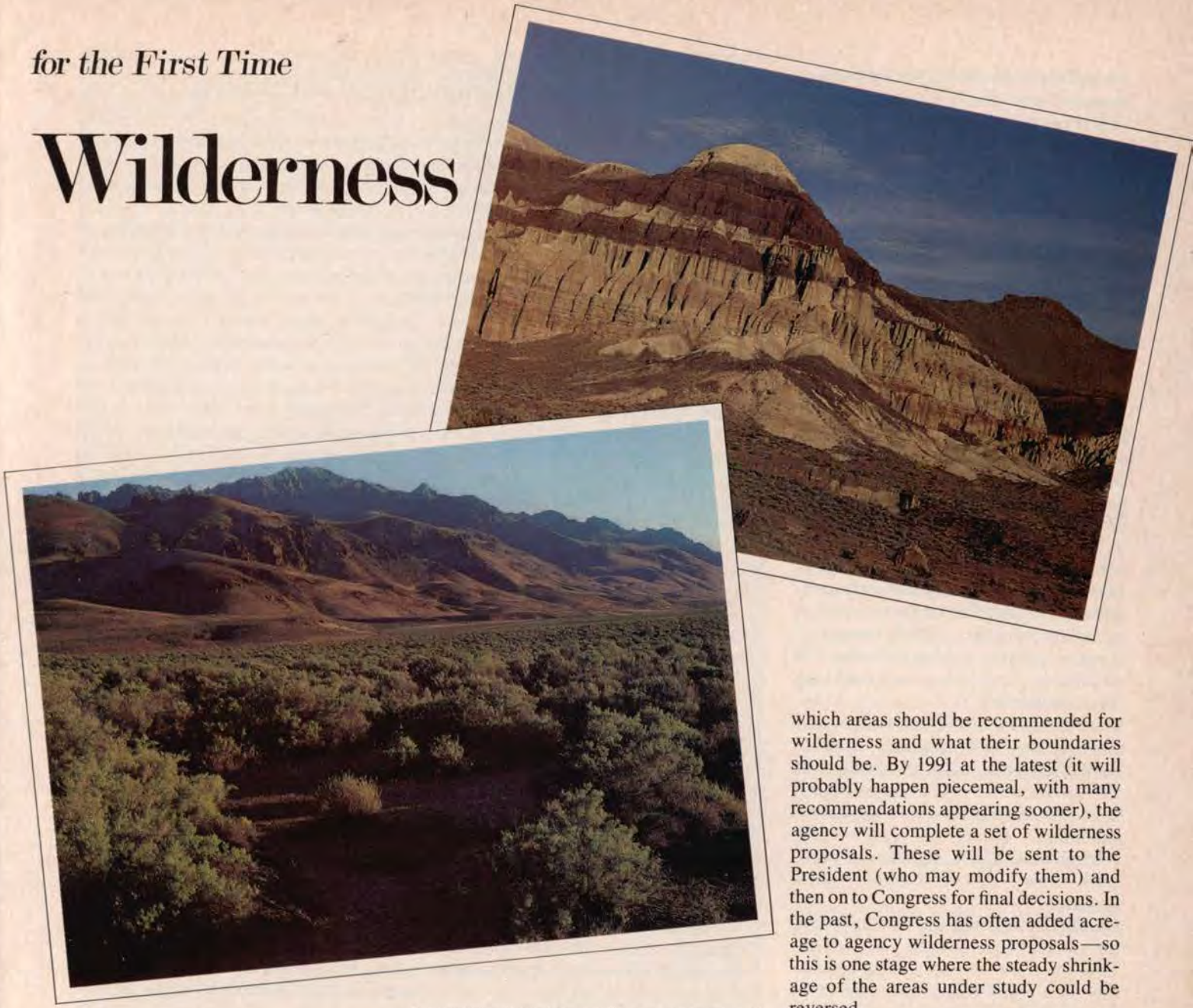
For a year now the BLM has been conducting a gigantic inventory of all its roadless land—a project that exceeds, in size and complexity, similar earlier efforts of the Forest Service, the Park Service and the Fish and Wildlife Service. Like the other agencies, though, the BLM lacks power to designate a wilderness. Only Congress can do that. So the result of all this study will be a list, submitted to Congress, of BLM lands the agency proposes for wilderness designation.

Along the way to recommendation, millions of acres will be dismissed from wilderness consideration—probably forever. The process is well under way. A first elimination has just been completed; a second is quickly approaching.

The BLM program has yet to catch public attention, as have Alaska and the Forest Service's RARE II. But the amounts of land involved—the possible gains and losses—are of the same huge order. It's time for conservationists to

for the First Time

Wilderness



Even within a limited geographic area, the variety of land administered by the BLM can be amazing. These photographs were all taken on BLM lands in eastern Oregon. ***From left:*** *Keiger Gorge, Little Blitzen Gorge, Steens Mountain and the banks of the Owyhee River.*

take notice—now, before the process goes much further.

The BLM system for finding and judging wild land is something like a sorting machine. Into one end, like so many tons of potatoes, is fed the entire stock of BLM land. Out the other end, sometime within the next ten years, will come a much smaller acreage blessed with the bureau's recommendation for wilderness status. The sorting will take place in several stages.

1. *The initial inventory*—the first cut—has just been completed. The planners made a quick, cursory survey of BLM lands. Leaving aside doubtful cases, they picked out all the land that "clearly and obviously" lacked wild character. This land was dropped from further consideration.

2. *The intensive inventory*—the second cut—is now in progress. The areas that remain are being evaluated for certain minimum wilderness characteristics. All qualifying areas will be designated wilderness study areas (WSAs); the rest will be dropped. This cut is scheduled for completion by September 1980.

3. *Wilderness study and final action*. The designated study areas will receive a detailed, careful examination. Planners, informed by public comment, will decide which areas should be recommended for wilderness and what their boundaries should be. By 1991 at the latest (it will probably happen piecemeal, with many recommendations appearing sooner), the agency will complete a set of wilderness proposals. These will be sent to the President (who may modify them) and then on to Congress for final decisions. In the past, Congress has often added acreage to agency wilderness proposals—so this is one stage where the steady shrinkage of the areas under study could be reversed.

Such is the machine. Through it pass the BLM roadless areas by the thousands, each numbered and so tersely described that the mind must struggle to recall the landscapes—peak and playa and canyon-carving river—for which these abstractions stand. But for all its assembly-line coldness, the BLM system isn't a bad one. Conservationists are partly responsible for its existence. To quite a degree, it is up to conservationists to make it work.

How is the BLM doing so far?

In the initial inventory, 174 million acres were surveyed. (Alaska lands will be studied later.) Of these, 117 million acres have been dropped; 57 million acres go to further study. Two thirds of the land, in short, is already out of the game. By disqualifying vast acreages as wilderness early on, the bureau hopes to

avoid the charge that its wilderness program is "locking up" too much land.

It is somewhat worrisome, this eager activity, and the sheer quantity of acreage eliminated is sobering. The territory under study is so vast—and the number of conservationists involved so small—that only a few roadless areas could be carefully tracked by activists. Excellent areas here and there may have been dropped from the field too early.

The complete results of the bureau's first efforts are still unknown. Nonetheless, when workers have found time to check the BLM's findings in the field, they tend to confirm the agency's verdicts. A few exceptions, serious enough in themselves, don't badly mar the record so far ascertained. But the next phase —the second elimination—is more dangerous.

Like the first pruning, the second one—to be complete ten months from now—is meant to eliminate only areas determined after further study not to be of wild character. "Wild character," though, requires careful definition. To qualify, says the BLM, an area must meet these standards:

Size. It must have 5000 acres (alone or in combination with adjoining land of another agency), or be an island, or be "of sufficient size as to make practicable its preservation and use in an unimpaired condition."

Naturalness. "The imprint of man's work must be substantially unnoticeable."

Quality of experience. The area must have either "an *outstanding* opportunity for solitude" or "an *outstanding* opportunity for a primitive and unconfined type of recreation" (emphasis in original).

BLM state offices have already begun to publish tentative lists of wilderness study areas based on these criteria. After public comment and revision, the lists will be made final. Conservationists must watch to see that valuable areas are not omitted, and must also look out for the following false arguments used in attempts to justify such omissions:

Solitude and screening. Many areas may be dropped for lack of "solitude." Solitude, the agency seems to imply, is the opportunity to hide from other people. BLM planners may argue that open valley lands are not wild because human figures can be seen for a long distance across a sloping desert plain. This interpretation should be protested. (Occasionally some official takes the solitude notion farther and faults a roadless area because buildings or human activities can be seen from within it. This is plainly an error by the BLM's own rules.)

The "outstanding" trap. Either solitude or "opportunity for primitive, unconfined recreation" must be available in "outstanding" degree. But what on earth does "outstanding" mean? With what is an area to be compared? With its immediate neighbors? With roadless areas in the same district? With the High Sierra? Or should the comparison be between the roadless area and the developed land surrounding it? The planners have not misused this rule often, but it could be used to disqualify large areas of first-class wild land.

Added standards. BLM planners may be tempted to drop areas they find to be of "poor quality" for any of a wide variety of reasons. But the rules say any area with the requisite size, naturalness and quality of experience must be designated a wilderness study area. The presence of picturesque scenery, for instance, doesn't matter. An area need not have canyons, water or impressive wildlife to be wild.

By this time next year, there will exist a final list of wilderness study areas. Then the game will change. The WSAs will be studied still more intensely, and all the heretofore-excluded questions will be asked. How scenic is the land? How suitable is it for hiking and camp-

The Controversial Special Inventories

Not all BLM roadless areas are moving down the same wilderness-study track. When decisions that could damage potential wilderness areas have to be made quickly, BLM officials can order "accelerated" inventories. There have been dozens of these, some of them highly controversial.

Take the IPP inventory. It dealt with roadless areas along proposed alternate routes of the Intermountain Power Project's electric transmission line in Utah and Nevada. In several BLM districts the inventory was poor; in Utah's Moab district it was altogether shoddy. Roadless areas were rejected wholesale without even being described in print (though the Moab manager labeled one key area "lousy"). Where wilderness study areas were recommended, their boundaries were drawn too narrowly, excluding large tracts of adjacent undeveloped land. The Sierra Club came close to legal action. In a friendly settlement, though, the BLM improved the inventory and agreed that areas not selected as WSAs would go back into the regular wilderness process, thereby getting a second chance at later wilderness designation.

An especially important inventory is being conducted right now in the mineral-rich Overthrust Belt of the northern Rockies, Utah and Nevada. Here the BLM is hurrying to clear the way for accelerated oil and gas leasing. Conservationists, concerned that anxiety over energy supplies may hamper careful planning, are watching this inventory closely.

In other cases, Congress itself has requested an early report. Before 1976 the agency had designated certain small primitive areas and natural areas; these automatically become wilderness study areas under the new program. Several wilderness proposals should result soon, ranging from a few thousand acres at Aravaipa Canyon in Arizona to an area of several hundred thousand acres adjoining Craters of the Moon National Monument on the Idaho lava plains.

The largest of the special inventories, though, makes all the others look minor. Congress instructed the BLM to plan at double speed for the vast California Desert Conservation Area: to select wilderness study areas in 1979 and to recommend actual wilderness areas by September 30, 1980. Study areas totalling 5.5 million acres—about 40% of the land in question—have been established. Now, in the context of the larger California Desert Plan, wilderness studies have begun.

Recently conservationists got a disquieting look at the emerging shape of the California plan. At a briefing in Washington, D.C., last July, Desert Plan Chief Neil Pfulb showed maps suggesting that, rather than planning, his team will merely compromise. The apparent strategy is to gauge the vehemence of opposing demands and split the resources accordingly. The same maps indicate that less than a third of the acreage in the WSAs might actually be proposed as wilderness.

The BLM denies that these early documents have much meaning; desert conservationists, however, are sharply alarmed.

ing? Do any interesting or threatened species live there? Is the region valuable to science? Does the public want wilderness there? What other demands may be made of the area (off-road vehicle use is a likely one)? Are extractable resources present in quantity (the focus will be on minerals and energy sources: gas, oil, coal and geothermal steam)?

The study stage, too, has special dangers. BLM planners already show some inclination to value the rugged and conventionally scenic spots above all others, underrating certain typical forms of desert wilderness: the long, gray slopes of alluvial fans; glistening lakebeds, dry eight months of the year; low, tangled badlands; even the nondescript regions whose beauty is in their simple vastness, and in their sky. Some members of the public, too, tend to seek out the spots of more obvious grandeur. But wilderness is something more than scenery and something more than recreation land.

The BLM has one additional basic choice to make. Quite apart from its wilderness program, the agency is drawing up land-use plans for all its great domain. The wilderness studies may constitute a part of this larger planning effort, or they may be done separately, wholesale, in the style of RARE II. Conservationists prefer the former, integrated approach. Such a method will show more clearly the resources at stake.

Ideally, wilderness study areas should be left unchanged, undamaged, until Congress decides what to do with them. Unfortunately, Congress itself sent the agency a horribly mixed signal on the question of interim management. Protect this land while we make up our minds, the law says, in effect—but don't protect it too much. Early in 1979 the BLM issued a draft of regulations that would allow road-building and other major development in wilderness study areas, provided only that the damage be reparable within five years after Congress acts. This creates a real paradox: a road that would have disqualified an area if it existed during the initial inventory could be carved through the designated study area later!

These draft regulations brought loud protest. A final version will probably appear this autumn; it may be better, from the standpoint of protection—or worse.

Even given suitable rules, the BLM may have a hard time enforcing them. In some parts of the West, people who live near BLM land regard that land as their own—to use exactly as they please. Any restriction is seen as a personal insult. Vandalism of signs, gates and buildings is common. Sometimes even local governments join in: in Utah, county authorities have built roads within BLM wild areas without so much as informing the agency.

After all the studying, how many areas—how many acres—will be recommended to Congress? There is some reason to fear the ultimate yield will be small. BLM staffers have modest expectations. At the BLM office for a district of more than 7 million acres of public land and more than 50 roadless areas, I heard this alarming off-the-record remark: "I expect there will be twenty wilderness study areas in the district. Four or five will go the route to final recommendation. And some of the very best land will get dropped."

We should be able to do better than that.

If two thirds of the acreage is eliminated at each stage in the wilderness process (the same proportion dropped in the first cut), the initial 175 million acres would shrink to 6 or 7 million acres of proposed wilderness. This certainly seems paltry.

Poll after poll has shown that Americans, when they think about the notion of preserving wilderness, like the idea very much. More surprising is a poll taken in the towns of the California desert that shows the same opinion prevails there, too. Yet you cannot travel much in Nevada or Utah, in eastern Oregon or Wyoming or parts of southern Idaho, and believe that support for wilderness is, in fact, so widespread. Local political leaders and opinion makers show a repugnance for the wilderness idea that is almost religious in fervor. The tone is set by ranchers and miners and off-road-vehicle drivers, but they are not alone; and even their reaction exceeds what plain, unalloyed self-interest justifies.

The following interchange between a local official and a BLM staff person epitomizes the conflict: "We've had enough of you guys telling us what to do," began the local official. "I'm not a violent man, but I'm getting to a point where I'll blow up bridges, ruins and vehicles. We're going to start a revolution. We're going to get back our lands. We're going to sabotage your vehicles. You had better start going out in twos and threes because we're going to take care of you BLMers." The astonished BLM staffer protested, "Mr. _____, I hope you're not threatening me." The reply, colorful yet ominous, was: "I'm not threatening you. I'm promising you."

As the wilderness process moves from its early, "objective" phase into actual wilderness studies, such local resistance will make itself more and more strongly felt. But this blatant hostility does not reflect opposition to wilderness itself, many local conservationists believe, so much as resentment of federal intervention in general—taxation, regulation, bureaucracy.

To keep the studies on track, the BLM planners must hear from the whole nation —not from the local residents only. □

John Hart has written several books on hiking and wilderness. His next book, Hiking the Great Basin, *will be published by Sierra Club Books in 1981.*

For More Detailed Information . . .

on how you can get involved, contact the person listed for your area.

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A Biblical Argument for Ecological Responsibility

The Gift of Good Land

WENDELL BERRY

MY PURPOSE here is double. I want, first, to attempt a Biblical argument for ecological and agricultural responsibility. Second, I want to examine some of the practical implications of such an argument. I am prompted to the first of these tasks partly because of its importance in our unresolved conflict about how we should use the world. That those who affirm the divinity of the Creator should come to the rescue of His creation is a logical consistency of great potential force.

The second task is obviously related to the first, but the origin of my motive here is somewhat more personal. I wish to deal directly at last with my own long-held belief that Christianity, as usually presented by its organizations, is not *earthly* enough—that a valid spiritual life in this world must have a practice and a practicality—it must have a material result. (I am well aware that in this belief I am not alone.) What I shall be working toward, then, is some sort of practical understanding of what Arthur O. Lovejoy called the "this-worldly" aspect of Biblical thought. I want to see if there is not at least implicit in the Judeo-Christian heritage a doctrine such as that the Buddhists call "right livelihood" or "right occupation."

Some of the reluctance to make a forthright Biblical argument against the industrial rape of the natural world seems to come from the suspicion that this rape originates with the Bible, that Christianity cannot cure what, in effect, it has caused. The best known spokesman for this view is Professor Lynn White, Jr., whose essay, "The Historical Roots of Our Ecologic Crisis," has been widely published.

Professor White asserts that it is a "Christian axiom that nature has no reason for existence save to serve man." He seems to base his whole argument on one Biblical passage, Genesis 1:28, in which Adam and Eve are instructed to "subdue" the earth. "Man," says Professor White, "named all the animals, thus establishing his dominance over them." There is no doubt that Adam's superiority over the rest of Creation was represented, if not established, by this act of naming; he *was* given dominance. But that this dominance was meant to be tyrannical, or that "subdue" meant to destroy, is by no means a necessary inference. Indeed, it might be argued that the correct understanding of this "dominance" is given in Genesis 2:15, which says that Adam and Eve were put into the Garden "to dress it and to keep it."

But these early verses of Genesis can give us only limited help. The instruction in Genesis 1:28 was, after all, given to Adam and Eve in the time of their innocence, and it seems virtually certain that the word "subdue" would have had a different intent and sense for them then than it could have for them, or for us, after the Fall.

It is tempting to dispute at length various statements in Professor White's essay, but he himself has made that unnecessary by giving us two sentences that very neatly define both his problem and my task. He writes, first, that "God planned all of this [the Creation] explicitly for man's benefit and rule: no item in the physical creation had any purpose save to serve man's purposes." And then, only a few sentences later, he says: "Christianity . . . insisted that it is God's will that man exploit nature for his *proper* ends." [Author's emphasis.]

It is certainly possible that an extremely critical difference exists between "man's purposes" and "man's *proper* ends." And one's belief or disbelief in that difference, and one's seriousness about the issue of propriety, will tell a great deal about one's understanding of the Judeo-Christian tradition.

I do not mean to imply that I see no involvement between that tradition and the abuse of nature. I know very well that Christians have often been not only indifferent to such abuse, but often have condoned and perpetrated it. That is not the issue. The issue is whether or not the Bible explicitly or implicitly defines a *proper* human use of Creation or the natural world. Proper use, as opposed to improper use, or abuse, is a matter of great complexity, and to find it adequately treated it is necessary to turn to a more complex story than that of Adam and Eve.

The story of the giving of the Promised Land to the Israelites is more serviceable to this issue than the story of the giving of the Garden of Eden, because the Promised Land is a divine gift to a *fallen* people. For that reason the giving is more problematical, and the receiving is more conditional and more difficult. In the Bible's long working-out of the understanding of this gift, it seems to me, we find the beginning—and, by

We must take care, among other things, of the land, which is never a possession but an inheritance to the living, borrowed from the unborn.

implication, the completion too—of the definition of an ecological discipline.

But first I have to acknowledge that, to me, the effort to make sense of this story involves a considerable difficulty: The tribes of Israel, though they see the Promised Land as a gift to them from God, are also obliged to take it by force from its established inhabitants. And so a lot of the "divine sanction" by which they act sounds like the sort of rationalization that invariably accompanies nationalistic aggression and theft. It is impossible to ignore the similarities to the westward movement of our own frontier. The Israelites followed their own doctrine of "manifest destiny," which for them, as for us, disallowed the human standing of their opponents. In Canaan, as in America, the conquerors acted upon the broadest possible definition of idolatry and the narrowest possible definition of justice. They conquered with the same ferocity and with the same genocidal intent.

But for all these similarities, there is a significant difference. Whereas the greed and violence of the American frontier produced an ethic of greed and violence that justified American industrialization, the ferocity of the conquest of Canaan was accompanied from the beginning by the working out of an ethical system antithetical to it—and antithetical, for that matter, to the American conquest that I have compared to it. The difficulty, then, but also the wonder of the story of the Promised Land is that, there, the primordial and still continuing dark story of human rapaciousness begins to be accompanied by a vein of light, one that, however improbably and uncertainly, still accompanies us. This light originates largely, it seems to me, in the idea of the land as a gift—not a free or a deserved gift, but a gift given only upon certain rigorous conditions.

It is a gift because the people who are to possess it did not create it. It is accompanied by careful warnings and demonstrations of the folly of saying that "My power and the might of mine hand hath gotten me this wealth" (Deuteronomy 8:17). Thus deeply implicated in the very definition of this gift is a specific warning against *hubris*, the great ecological sin, just as it is the great sin of politics. People are not gods. They must not act like gods or assume a godly authority. If they do, terrible retributions are in store. In this warning we have the root of the issue of propriety, of *proper* human purposes and ends. We must not use the world as though we had created it ourselves.

The Promised Land, moreover, is not a permanent gift. It is "given," but only for a time, and only for so long as it is properly used. It is stated unequivocally, and repeated again and again, that "the heaven and the heaven of heavens is the Lord's thy God, the earth also, with all that therein is" (Deuteronomy 10:14). What is given is not ownership, but a sort of tenancy, the right of habitation and use: "The land shall not be sold forever: for the land is mine; for ye are strangers and sojourners with me" (Leviticus 25:23).

In token of His landlordship, God required a sabbath for the land, which was to be left fallow every seventh year; and a sabbath of sabbaths every fiftieth year, a "year of jubilee," during which not only would the fields lie fallow, but the land would be returned to its original owners, as if to free it of the taint of trade and the conceit of human ownership. But beyond their agricultural and social intent, these sabbaths ritualize an observance of the limits of "my power and the might of mine hand"—the limits of human control. Looking at their fallowed fields, the people are to be reminded that the land is theirs only by gift; it exists in its own right, and does not begin or end with any human purpose.

The Promised Land, moreover, is "a land which the Lord thy God careth for: the eyes of the Lord thy God are always upon it . . ." (Deuteronomy 11:12). And this care promises a repossession by the true landlord, and a fulfillment not in the power of its human inhabitants: ". . . as truly as I live, all the earth shall be filled with the glory of the Lord" (Numbers 14:21)—a promise recalled by St. Paul in Romans 8:21: ". . . the Creature [the Creation] itself shall be delivered from the bondage of corruption into the glorious liberty of the children of God."

Finally, and most difficult, the good land is not given as a reward. It is made clear that the people chosen for this gift do not deserve it, for they are "a stiffnecked people" and have been wicked and faithless. To such a people such a gift can be given only as a moral predicament: Having failed to deserve it beforehand, they must prove worthy of it afterwards; they must use it well, or they will not continue long in it.

How are they to prove worthy?

First, they must be faithful, grateful and humble; they must remember that the land is a gift: "When thou hast eaten and art full, then thou shalt bless the Lord thy God for the good land which he hath given thee" (Deuteronomy 8:10).

Second, they must be neighborly. They must be just, kind to one another, generous to strangers, honest in trading. These are social virtues, yet, as they invariably do, they have ecological and agricultural implications. For the land is described as an "inheritance"; the community is understood to exist not just in space, but also in time. One lives in the neighborhood, not just of those who now live "next door," but of the dead who have bequeathed the land to the living, and of the unborn to whom the living will in turn bequeath it. The demanding fact here is that we can have no direct behavioral relation to those who are not yet alive. The only neighborly thing we can do for them is to preserve their inheritance: We must take care, among other things, of the land, which is never a possession, but an inheritance to the living, borrowed from the unborn.

And so the third thing the possessors of the land must do to be worthy of it is to practice good husbandry. The story of the Promised Land has a good deal to say on this subject, and yet its account is rather fragmentary. We must depend heavily on implication. Let us consider just a couple of verses (Deuteronomy 22:6-7):

You may eat the harvest
but you must save the seed,
and you must preserve the fertility of the fields.

> If a bird's nest chance to be before thee in the way in any tree, or on the ground, whether they be young ones, or eggs, and the dam sitting upon the young, or upon the eggs, thou shalt not take the dam with the young.
>
> But thou shalt in any wise let the dam go, and take the young to thee; that it may be well with thee, and that thou mayest prolong thy days.

This, obviously, is a perfect paradigm of ecological and agricultural discipline, in which the idea of inheritance is necessarily paramount. The inflexible rule is that the source must be preserved. You may take the young, but you must save the breeding stock. You may eat the harvest, but you must save seed, and you must preserve the fertility of the fields.

What we are talking about, of course, is an extremely elaborate understanding of charity. It is so elaborate because of the perception, implicit here—explicit in the New Testament—that charity by its very nature cannot be selective—that it is, so to speak, out of human control. It cannot be selective because between any two humans, or any two creatures, all Creation exists as a bond. Charity cannot be just human, any more than it can be just Jewish or just Samaritan. Once begun, wherever it begins, it cannot stop until it includes all Creation, for all creatures are parts of a whole upon which each is dependent, and it is a contradiction in terms to love your neighbor and despise the great inheritance on which all life depends. Charity even for one person does not make sense except in terms of an effort to love all Creation in response to the Creator's love for it.

And how is this charity answerable to "man's purposes"? It is not, any more than is the Creation itself. Professor White's contention that the Bible proposes such a thing is, so far as I can see, simply wrong. It is not allowable to love the Creation according to the purposes one has for it, any more than it is allowable to love one's neighbor in order to borrow tools. The wild ass and the wild ox are said in the Book of Job (39:5-12) to be "free," precisely in the sense that they are not subject or serviceable to human purposes. The same point—though it is not the main point of that passage—is made in the Sermon on the Mount in reference to "the fowls of the air" and "the lilies of the field." Faced with this problem in Book VIII of *Paradise Lost*, Milton scrupulously observes this same reticence. Adam asks about "celestial Motions," and Raphael refuses to explain, making the mystery a test of intellectual propriety and humility:

The Creator's love
for the Creation is mysterious
precisely because it does not conform to human purposes.

> . . . for the Heav'n's wide Circuit, let it speak
> the Maker's high magnificence, who built
> So spacious, and his Line stretcht out so far;
> That Man may know he dwells not in his own;
> An Edifice too large for him to fill,
> Lodg'd in a small partition, and the rest
> Ordain'd for uses to his Lord best known.
> (Lines 100-106)

The Creator's love for the Creation is mysterious precisely because it does not conform to human purposes. The wild ass and the wild lilies are loved by God for their own sake; and yet they are part of a pattern that we must love because of our dependence on it. This is a pattern that humans can understand well enough to respect and preserve, though they cannot "control" it or even hope to understand it completely. The mysterious and the practical, the Heavenly and the earthly, are thus joined. Charity is a theological virtue and is prompted, no doubt, by a theological emotion, but it is also a practical virtue because it must be practiced. The requirements of this complex charity cannot be fulfilled by smiling in abstract beneficence on our neighbors and on the scenery. It must come to acts, which must come from skills. Real charity calls for the study of agriculture, soil husbandry, engineering, architecture, mining, manufacturing, transportation, the making of monuments and pictures, songs and stories. It calls not just for skills but for the study and criticism of skills, because in all of them a choice must be made: They can be used either charitably or uncharitably.

How can you love your neighbor if you don't know how to build or mend a fence, how to keep your filth out of his water supply and your poison out of his air; or if you do not produce anything and so have nothing to offer, or do not take care of yourself and so become a burden? How can you be a neighbor without *applying* principle—without bringing virtue to practical issues? And how will you practice virtue without skills?

The ability to be good surely is not the ability to do nothing. It is not negative or passive. It is the ability to do something well—to do good work for good reasons. In order to be good you have to know how—and this knowing is vast, complex, humble and humbling; it is of the mind and of the hands, of neither alone.

The divine mandate to use the world justly and charitably, then, defines every person's moral predicament as that of a steward. But this is hopeless and meaningless unless it produces an appropriate discipline: stewardship. And stewardship

The industrial revolution has held in contempt the concern for quality, for responsible workmanship and good work. . . .

is hopeless and meaningless unless it involves long-term courage, perseverance, devotion and skill. This skill is not to be confused with any accomplishment or grace of spirit or of intellect. It has to do with everyday proprieties in the practical use and care of created things—with "right livelihood."

If "the earth is the Lord's" and we are His stewards, then obviously some livelihoods are "right" and some are not. Is there, for instance, any such thing as a Christian stripmine? A Christian atomic bomb? A Christian nuclear power plant or radioactive waste dump? What might be the design of a Christian transportation or sewer system? Does not Christianity imply limitations on the scale of technology, architecture, and land holding? Is it Christian to profit or otherwise benefit from violence? Is there not, in Christian ethics, an implied requirement of practical separation from a destructive or a wasteful economy? Do not Christian values require the enactment of a distinction between an organization and a community?

It is clear, I hope, that it is impossible to understand, much less to answer, such questions except in reference to issues of practical skill, because they all have to do with distinctions between kinds of action. These questions, moreover, are intransigently personal, for they ask, ultimately, how each livelihood and each life will be taken from the world, and what each will cost of the livelihoods and lives of others. Organizations and even communities cannot hope to answer such questions until persons have begun to ask them.

But here we must acknowledge, I think, one inadequacy of Judeo-Christian tradition. This tradition, at least in its most prominent and best-known examples, doesn't provide us with a precise enough understanding of the commonplace issues of livelihood. There are two reasons for this.

One is the "otherworldly philosophy" that, according to Lovejoy, "has, in one form or another, been the dominant official philosophy of the larger part of civilized mankind through most of its history. . . . The greater number of the subtler speculative minds and of the great religious teachers have . . . been engaged in weaning man's thought or his affections, or both, from . . . Nature. . . ." (*The Great Chain of Being*, 26). The connection here seems to me to be plain enough to need no elaboration.

The second reason, which does require some elaboration, is that the Judeo-Christian tradition as embodied in its art and literature, including the Bible, is so strongly heroic. The poets and storytellers in this tradition have tended to be interested in the extraordinary actions of "great men"—actions unique in grandeur, such as may occur only once in the history of the world. These extraordinary actions do indeed bear a universal significance, but they cannot very well serve as examples of ordinary behavior. Ordinary behavior belongs to a different dramatic mode, a different understanding of action, even a different understanding of virtue. The drama of heroism raises, above all, the issue of physical and/or moral courage: Does the hero have, in extreme circumstances, the courage to obey—to perform the task, the sacrifice, the resistance, the pilgrimage that he is called on to perform? The drama of ordinary or daily behavior also raises the issue of courage, but it raises at the same time the issue of skill; and, because ordinary behavior lasts so much longer than heroic action, it raises in a more complex and difficult way the issue of perseverance. It may, in some ways, be easier to be Samson than to be a good husband or wife day after day for 50 years.

Heroic works are meant to be (among other things) instructive and inspiring to ordinary people in ordinary life, and they are, grandly and deeply so. But there are two issues they are precluded by their nature from raising: the issue of lifelong devotion and perseverance in unheroic tasks, and the issue of good workmanship or "right livelihood."

It can be argued, I believe, that until fairly recently there was simply no need for attention to such matters, for there existed yeoman or peasant or artisan classes, whose birthright was the fundamental skills of earth-keeping. These were the people who did the work of feeding and clothing and housing, and who were responsible for the necessary skills, disciplines and restraints. As long as these classes and their traditions were strong, there was at least the hope that the world would be well used. But probably the most revolutionary accomplishment of the industrial revolution was to destroy the traditional livelihoods and so break down the cultural lineage of those classes.

The industrial revolution has held in contempt not only the "obsolete skills" of those classes, but the concern for quality, for responsible workmanship and good work that supported those skills. For the principle of good work it substituted a secularized version of the heroic tradition: the ambition to be a "pioneer" of science or technology, to make a "breakthrough" that will "save the world" from some "crisis," which by now is usually the result of some previous "breakthrough."

The best example we have of this kind of hero, I am afraid, is the fallen Satan of *Paradise Lost*—Milton undoubtedly having observed in his own time the prototypes of industrial heroism. This is a hero who instigates and influences the actions of others, but does not act himself. His heroism is of the mind only—escaped, as far as possible, not only from divine rule, from its place in the order of Creation or the Chain of Being, but also from the influence of material creation:

> A mind not to be chang'd by Place or Time.
> The mind is its own place, and in itself
> Can make a Heav'n of Hell, a Hell of Heav'n.
> (Book I, lines 253-255)

This would-be heroism is guilty of two evils that are prerequisite to its very identity: *hubris* and abstraction. The industrial hero supposes that "mine own *mind* hath saved me"—and moreover that it may save the world. Implicit in this is the assumption that one's mind is one's own and that it may choose its own place in the order of things; one usurps divine authority, and thus, in classic style, becomes the author of results that one can neither foresee nor control.

And because this mind is understood only as a cause, its primary works are necessarily abstract. We may need to remind

Paradise Lost?

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"The problem of world hunger" cannot be solved until it is understood and dealt with by local people as a multitude of local problems of ecology, agriculture and culture.

ourselves at this point that materialism in the sense of the love of material things is not in itself an evil. As C. S. Lewis pointed out, God too loves material things; He invented them. The Devil's work is abstraction—not the love of material things, but the love of their quantities—which, of course, is why "David's heart smote him after that he had numbered the people" (II Samuel 24:10). It is not the lover of material things but the abstractionist who defends long-term damage for short-term gain, or who calculates the "acceptability" of industrial damage to ecological or human health, or who counts dead bodies on the battlefield. The true lover of material things does not think in this way, but is answerable instead to the paradox in the parable of the lost sheep: that each is more precious than all.

But perhaps we cannot understand this secular heroic mind until we understand its opposite: the mind obedient and in place. And for that we can look again at Raphael's warning in Book VIII of *Paradise Lost:*

> . . . apt the Mind or Fancy is to rove
> Uncheckt, and of her roving is no end;
> Till warn'd, or by experience taught, she learn
> That not to know at large of things remote
> From use, obscure and subtle, but to know
> That which before us lies in daily life,
> Is the prime Wisdom; what is more, is fume,
> Or emptiness, or fond impertinence,
> And renders us in things that most concern
> Unpractic'd, unprepar'd, and still to seek.
> Therefore from this high pitch let us descend
> A lower flight, and speak of things at hand
> Useful . . .
>
> (Lines 188-200)

In its immediate sense this is a warning against thought that is theoretical or speculative (and therefore abstract), but in its broader sense it is a warning against disobedience—the eating of the forbidden fruit, and act of *hubris*, which Satan proposes as a compellingly reasonable theory and which Eve undertakes as a speculation.

An excellent example of the conduct of industrial heroism is to be found in the present rush of experts to "solve the problem of world hunger," known in industrial heroic jargon as "the world food problematique." As is characteristic of industrial heroism, the professed intention is entirely salutary: nobody should starve. The trouble is that "world hunger" is not a problem that can be solved by a "world solution." Except in a very limited sense, it is not an industrial problem, and industrial attempts to solve it—such as the "Green Revolution" and "Food for Peace"—have often had grotesque and destructive results. "The problem of world hunger" cannot be solved until it is understood and dealt with by local people as a multitude of local problems of ecology, agriculture, and culture.

The most necessary thing in agriculture for instance, is not to invent new technologies or methods, not to achieve "breakthroughs," but to determine what technologies and methods are appropriate to specific people, places and needs, and to apply them correctly. Application is the crux (and is critical here because the heroic approach ignores it) because no two farms or farmers are alike; no two fields are alike. Just the changing shape or topography of the land makes for differences of the most formidable kind. Abstractions never cross these gaps without either doing damage or ceasing to be abstractions. And prefabricated industrial methods and technologies *are* abstractions. The bigger and more expensive, the more heroic they are, the harder they are to apply considerately and conservingly.

Application is the most important work, but also the most modest, complex, difficult and long—and so it goes against the grain of industrial heroism. It destroys forever the notions that the world can be thought of (by humans) as a whole and that humans can "save" it as a whole—notions we can well do without, for they prevent us from understanding our problems and from growing up.

To use knowledge and tools in a particular place with good long-term results is not heroic. It is not a grand action visible from a long distance or for a long time. It is a small action, but more complex and difficult, more skillful and responsible, more whole and enduring than most grand actions. It comes of a willingness to devote oneself to work that perhaps only the eye of Heaven will see in its full intricacy and excellence. Perhaps the real work, like real prayer and real charity, must be done in secret.

The great study of stewardship, then, is "to know / That which before us lies in daily life" and to be practised and prepared "in things that most concern." The angel is talking about good work, which is to talk about skill. With the loss of skill we lose stewardship; in losing stewardship we lose fellowship; we become outcasts from the great neighborhood of Creation. It is possible—as our experience in *this* good land shows—to exile ourselves from Creation and to ally ourselves with the principle of destruction—which is, ultimately, the principle of nonentity. It is to be willing, in general, for beings to not-be. And once we have allied ourselves with that principle, we are foolish to think that we can control the results. The "regulation" of abominations is a modern governmental exercise that never succeeds. If we are willing to pollute the air—to harm the elegant creature known as the atmosphere—by that token we are willing to harm all creatures that breathe, ourselves and our children among them. There is no begging off or "trading off." You cannot affirm the power plant and condemn the smokestack, or affirm the smoke and condemn the cough.

That is not to suggest that we can live harmlessly, or strictly at our own expense; we depend upon other creatures and survive by their deaths. To live we must daily break the body and shed the blood of Creation. When we do this lovingly, knowingly, skillfully, reverently, it is a sacrament. When we do it greedily, clumsily, ignorantly, destructively, it is a desecration. By such desecration we condemn ourselves to spiritual and moral loneliness, and others to want. □

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Stewardship of the Land Is the Basis of Our Nation's Real Wealth

Reserves, Preserves and Land Trusts

HAL RUBIN

Courtesy of The Trustees of Reservations

The Trustees of Reservations saved this area, now the Coaskata-Coatue Wildlife Refuge, a 963-acre section of barrier beach on Nantucket Island, Massachusetts.

IN PITTSBURGH, PENNYSYLVANIA, and Oakland, California—to name just two—refuse-littered empty lots are being transformed into community gardens. In New Jersey, Maine and Illinois, marshlands, lakes and forests are being placed in trusteeship for the benefit of future generations. In Georgia and California the rural landless are being given access to farms.

All of these seemingly disparate and unrelated activities reflect the growing understanding that land is the basis of all wealth, and that stewardship rather than exploitation is the appropriate way for a nation to sustain its wealth. That philosophy is spurring a nationwide movement; its objective is to strike a balance between the nation's long-term well-being and exploitation of the land for economic gain.

Land conservancy ensures that future generations will have access to the pleasures and benefits of natural open space; that the nation's cities will become more liveable, especially for the poor; and that the small family farm will continue to exist despite the pressures of large-scale mechanized agribusiness.

The regional and nationwide land trust and conservation organizations share several intriguing aspects. Many of them function almost as mendicant orders—but orders of land-managers and restorers rather than monks. The various organizations' nonprofit, tax-exempt status enables them to offer appealing tax benefits to donors—individual or corporate owners who donate land, cash, buildings or materials. They seem to appeal especially to landowners with a strong emotional attachment to the land's health—and to others who believe in the principles of land stewardship. Land trusts generally contract long-term leases with current users to guarantee their rights and security. The conservation groups act as trustees of the property they acquire, or they turn over the property to appropriate public agencies.

The conservancy movement is also marked by the striking variety of its adherents. Its supporters include Boston Brahmins, top-level corporate executives, Third-World peoples, activists from the nation's ghettos, survivors of the Haight-Ashbury, dispossessed farmers and others in search of an ethic for the 1980s. The tie that binds is a reverence for land that harks back to the original Americans.

Nationwide, the main branches of this movement display two banners: nature conservancy and land trust. Whichever flag they march under, they are motivated by a concern for future generations.

Nature conservancy seems to be in the vanguard. The nation's oldest independent preservation group, the Trustees of Reservations, was started in Massachusetts in 1891 by Charles Eliot of Cambridge, Massachusetts. Eliot, a

The British National Trust

English nobility long ago established a tradition of personal stewardship of the land. Owners were not absentee landlords; land was not a mere economic asset, but a vocation and a preoccupation of the genteel.

Today Britain's countryside, long idealized and sentimentalized, is being changed by an expanding consumer economy. The increased mobility of city dwellers has applied unprecedented pressure to traditional systems of land use. The seacoast and the countryside are being commercialized and developed; the limited resources of a small island are being overwhelmed.

Social forces, too, are altering the pattern of land ownership. The great estates are breaking up, and small farmers find their land is more valuable as real estate than as working farms. As the speculative value of land outstrips its agricultural value, the land ethic fades.

However, planning the use of scarce resources comes more easily to the people of a crowded island than to Americans, with their frontier heritage. In 1932 the Town and Country Planning Act established a structure for England's land-use regulation. Later revisions created systems for planning and for public inquiry to settle appeals from decisions.

Certain categories of land are given special protection within the planning process: national parks, areas of outstanding natural beauty, national nature reserves, sites of special scientific interest, urban green belts, the coast, and common lands and public rights-of-way.

These categories include more than 4464 miles of long-distance footpaths; 130 nature reserves comprising 268,642 acres plus 13 forest reserves; 2600 sites of special scientific interest; 1891 square miles of green belts that will be left permanently open; and, in England and Wales, 500,000 acres of common lands and 16,000 parcels of privately owned land that will not be enclosed. The Forestry Commission manages 3 million acres, and half a million acres are open to the public as forest parks.

Parliament, unlike Congress, does not determine the ownership of land. Today the British National Trust for Places of Historic Interest and Natural Beauty is the largest landowner in England.

From the outset, the British National Trust sought the patronage of nobility. Between 1923 and 1931, many great estates and castles were acquired; the landed gentry fell on hard times after World War I, and the trust launched a program to preserve historic houses that could not be saved through legislated tax relief. Then in 1939 the trust launched a "country house scheme" under which the donor of an endowed country house is permitted to continue residence, subject to public access on certain days. The country house scheme made the trust a holding and management agency, "the surveyor of vast mansions, the curator of extensive collections, and the foremost gardener in the country."

Currently, the National Trust owns whole rural villages, great estates and endowment lands as large as 13,000 acres. At one time visitors had to be lured to trust properties, but since 1945 the problem has been one of control. By 1971 the trust had been host to 3.9 million estate visitors, and millions more enjoyed the open spaces and nature preserves.

Today, through ownership and protective covenant, the British National Trust controls more than 450,000 acres and 250 buildings. It sees itself as something more than a public service organization; it sees itself as a trustee for future generations, with an obligation to resist pressures. For this position, it is often criticized as being obstructionist and against progress.

Americans are baffled by the semi-private, semi-public nature of the British National Trust. Its purposes, powers and constitution are laid down by acts of Parliament, and the trust receives grants from the government, but it is independent of direct governmental supervision and control. Governed by a 52-member council representing 29 British organizations, most of them cultural and naturalist groups, the trust has somehow managed to achieve a balanced program.

landscape architect, was the son of Charles William Eliot, president of Harvard University from 1869 to 1909.

With the growth of cities and of the urban era, Eliot saw the need to preserve open space. Two of his contemporaries in landscape design quaintly described the need: " . . . to serve as a relief, an antidote to the too great insistence of man's own affairs and his own constructions."

Today the Trustees of Reservations is the custodian of 61 open spaces and historic areas totaling more than 18,000 acres available to the public. They range from Berkshire County hill country to Cape Cod and Martha's Vineyard. The holdings include seashores, and woodlands, river banks, streams and waterfalls, hilltops and headlands, wetlands, marshes and wildlife areas as well as a host of historical sites.

Filling the gap between the efforts of larger statewide agencies, such as the Trustees of Reservations, and various town conservation committees are organizations like the Berkshire County Land Trust and Conservation Fund. Land acquired by this trust is retained in its natural state to become part of the Berkshire Hills heritage.

The Stockbridge Yokun Ridge Reserve is one example of the trust's achievements; it has acquired parcels of rocky land with limited commercial usefulness but with inestimable value as a recreation resource. The purpose of the program is to link the separate tracts of publicly owned land into a unified open-space system in the heart of Berkshire County.

Within an hour's drive north of New York City, the Mianus River sends white water through a narrow, 150-foot-deep Ice Age gorge where deer, foxes, raccoons, squirrels and skunks find their home. The area is thickly forested with hemlock up to 300 years old and more than 800 species of trees, shrubs and vines. Each year more than 10,000 visitors come to the gorge to hike its trails and to study the flora and fauna of an area that hasn't changed since the English and Dutch settlers arrived. Part of the reason for the gorge's survival is the Mianus River Gorge Conservation Committee of Stamford, Connecticut. The project dates back to 1953, when a group of conservationists organized for the purpose of acquiring and maintaining the area in its natural condition. Since its founding, the committee has acquired about 350 acres stretching two and a half miles along the banks of the river.

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northern Delaware, a proposal was presented to township supervisors that would have created an industrial area in Chadds Ford, near the Brandywine River. Local residents founded the Brandywine Conservancy to prevent industrialization and pollution of the river and to maintain the natural beauty and character of the area.

From its inception, the Brandywine Conservancy founders recognized the need for a partnership aimed at controlling the pressure of urbanization so that the valley and similar areas elsewhere could be preserved for recreation.

Looking for better ways to manage urban growth, the conservancy established its Environmental Management Center. The center has pioneered sound land- and water-management techniques and dealt with problems involving farming, forestry, land development and the protection of historic areas. The center also conducts classes, seminars and workshops.

In New Hampshire, there is the Society for the Protection of New Hampshire Forests; like the other conservancy and trust groups, it is a voluntary, nonprofit organization. The society's current holdings include about 10,600 acres of forests, fields and pastures. Its forestry management practices are a model for the lumber industry, and its diverse activities include youth conservation camps, nature study, courses for woodlot owners, preservation of agricultural land, promoting conservation measures on the state and federal levels, operating a museum of natural history, and projects to encourage the use of wood energy.

Many regional conservancy groups maintain an affiliation with The Nature Conservancy of Arlington, Virginia, a national organization formed in 1951. The conservancy is committed to the preservation of natural diversity by protecting a variety of types of land.

To date The Nature Conservancy and its members have preserved 1,395,329 acres of forests, marshes, mountains and islands, some of it home to rare and endangered species of wildlife and plants. More than 2000 projects have been completed since acquisition of the first preserve in 1954. About 60% of the preserves are retained by the conservancy and managed by volunteer land stewards.

The conservancy is the nation's foremost land conservation organization, with a cadre of 47,000 members. The group has frequently demonstrated its

ability to work with corporate owners, banks and government agencies to save critical pieces of land. When called upon, The Nature Conservancy makes its special expertise available to other conservation groups, as when it helped the Society for the Protection of New Hampshire Forests purchase Crawford Notch, the gateway to the White Mountains.

Among the many natural areas around the country that have been saved by the conservancy are 500 acres of Jupiter Island, off the Florida Coast; 7500 acres in the Great Dismal Swamp of North Carolina; and 55,000 acres on Santa Cruz Island, off the Southern California coast. Currently the conservancy is working on the first in a series of transactions that ultimately will preserve the 12,000-acre Mueller Ranch, along the western flank of Pikes Peak in Colorado.

The Trust for Public Land, of San Francisco, has a credo: "Land is our most basic resource. Whether for open space, natural resources, agriculture, innovative development, urban parks or neighborhood gardens, land must be preserved." Unlike conservancy groups, TPL does not hold land. And unlike other land trusts that are concerned with rural areas and agricultural land, TPL is primarily concerned with improving the use of urban land.

For example, there are 100,000 vacant lots going to waste in Los Angeles, 45,000 in New York City, and 20,000 in Philadelphia. Through its Oakland, California, land project, TPL has been the catalyst to put vacant lots under the communtiy control of neighborhood land trusts. A foundation has given $50,000 to advance such projects in San Francisco, Richmond, Oakland and Berkeley, California.

After demonstrating that neighborhood land trusts will work in Oakland, TPL started similar projects in Newark, New Jersey, and in New York City's South Bronx and Lower East Side. TPL does not tell people in the inner city what they need. It asks what their land-use needs are and then helps train residents in nonprofit land-acquisition techniques while providing them with legal backup and expertise. When needed, financial grants are available.

Essentially, TPL arranges for the transfer of private land and structures to public ownership. In New York City, tenements are rehabilitated by residents of the neighborhood. Residents are matching the grants with what is called "sweat equity," their own labor on the property. The land is conveyed to them in

the form of a trust as soon as the sweat-equity process is completed. A board of directors elected by the neighborhood acts as the steward.

TPL has taught nonprofit land acquisition to 50 groups around the country. On Vernon Avenue in Bedford-Stuyvesant, Brooklyn, residents acquired an abandoned lot covered with trash and rubble and turned it into an award-winning vegetable garden and sitting area. In the Greenslaw section of Memphis, the residents acquired twelve buildings as donations and rehabilitated eight others for sale and rental to neighbors. In Atlanta's Mechanicsville neighborhood, community members converted some old buildings and cleared lots to create a combination thrift shop, food cooperative and meeting place.

Working with the Trust for Public Land, neighborhood groups from New York to California have converted vacant properties into parks, "tot lots," basketball courts, sports fields, neighborhood playgrounds, landscaped connector paths and adventure playgrounds. Abandoned and dilapidated buildings have been acquired for historic preservation or for such adaptive reuses as community centers, multi-purpose service centers, neighborhood organization offices, community art studios, child-care centers, community-owned businesses and economic ventures, as well as for sites of rehabilitated low-cost housing.

These ventures have so impressed the U.S. Department of the Interior that it has published a Citizen's Action Manual, a guide to recycling neighborhood vacant property based on the Trust for Public Land's Seven Step Plan.

Although its activities are still small-scale, TPL is accomplishing basic land reform with its land-trust techniques. In the future, TPL expects to do less acquisition and more training, teaching people how to turn a land deal without money. Graduates of the TPL training program are branching into other projects; the Sonoma Land Trust and the Big Sur Land Trust are typical.

The Sonoma Land Trust's stewardship already includes more than 600 acres of forest sanctuary in a burned-out watershed that is being replanted and restored. TPL trainees are working to protect and preserve the Big Sur region, one of the most beautiful stretches of coast in California.

Although TPL pioneered the urban land trust, other groups have been at work in America's inner cities. The Columbus Heights Community Ownership

Project in Washington, D.C., has established a cooperative program to provide low-cost housing. A drive is on to halt real-estate speculation that forces out low-income residents.

The Pittsburgh History and Landmarks Foundation specializes in the restoration of architecturally significant old houses and neighborhoods without evacuating the low-income people who live there. The foundation acquires substandard dwellings and restores them; housing is then rented by the housing authority at slightly below market rates. Instead of demolishing Pittsburgh's downtown, the foundation breathed new life into the Golden Triangle.

Just as the conservancy-land trust movement has been successful in protecting wilderness and natural areas and in revitalizing parts of the inner city, the same approach is working in rural America to give poor farmers a stake in the land. New Communities, Incorporated, in Lee County, Georgia, the Northern California Land Trust, and the Farmlands Project are examples.

In 1970, New Communities purchased 5700 acres of farmland and turned 16 former sharecropper families into independent operators. The cooperative farm is the largest black-owned single-tract farm in the nation. It produces vegetables, livestock, fruit, nuts and forest products.

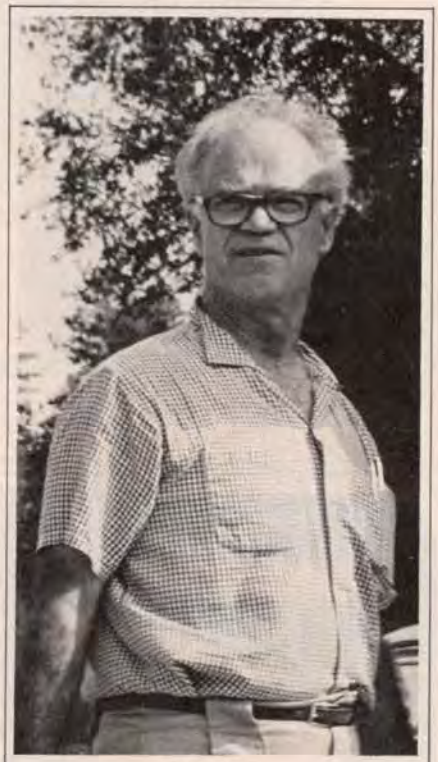
A statewide land-trust organization in Maine, the Sam Ely Community Services Corporation, was started in 1972 to help alleviate rural poverty. One of its latest efforts is the Farmlands Project, which helps young farmers gain access to farms that are being abandoned because the owners find the operation unprofitable or are reaching retirement age. The corporation, by purchasing the land and putting it in trust, assures the retiring farmer of continued income, provides the young farmer with the know-how of a veteran, and keeps the land out of the hands of developers or of corporate agribusiness.

Another venture to bring the landless poor back to the land is the Northern California Land Trust, which for a small leasing fee makes land available to farmers who will treat it with respect. The standard practice is to lease the land for 50 years to low-income families, at an annual rate calculated to repay the initial value over that period. Income is used to purchase additional land. □

Hal Rubin teaches journalism at Sacramento State University and is a free-lance writer.

Trees and a Man: Tony Look's Dream Rescues an Ecosystem

JOHN J. BERGER



Tony Look

FROM AFAR it looked as if tree-worshipers had invaded a steep glen in the California coastal mountains one sunny March morning. Half a dozen families bustled among the huge trees of Big Basin Redwoods State Park easing young redwood saplings out of nursery cans and into the spongy earth. Children dashed about, helping to nestle in new trees.

These people were volunteer forest-restorers; their immediate aim was to restore areas of the Big Basin redwood forest that can no longer recover naturally from overuse and logging. The volunteers are local people donating weekend hours and spare dollars to support the Sempervirens Fund, a nonprofit reforestation group named for *Sequoia sempervirens*, the coast redwood.

The group has already been instrumental in saving thousands of acres of forest. Sempervirens means "ever-living," and the Sempervirens Fund is part of a growing movement to restore damaged habitat to natural conditions so the redwoods will thrive forever. The group's leaders hope that planting native trees and shrubs in Big Basin will be a prelude to more ambitious habitat-restoration elsewhere. This possibility was certainly in the mind of the man superintending the work that day. The group's leader was a small and alert middle-aged man with a strong neck and powerful arms, wearing a Tyrolean hat and baggy woolens. The man guiding the work that day, as on many others, was Tony Look, Sierra Club activist and the founder of the Sempervirens Fund.

The trees of the mature redwood forest around the work site are so nobly vast in scale that Big Basin seems a Notre Dame among forests. Once there were 200,000 acres of redwoods in California; today there are only 18,000. Established in 1902, Big Basin is the oldest state park in California. Since its founding, the park has grown from only 3800 acres to nearly 15,000. But state protection has not been enough; in recent years some of the park's finest haunts have changed. On many heavily used trails beneath the vaulted canopy of mature redwoods and along eroded stream banks, where thousands of hikers have passed, the vegetation is so badly trampled and the earth so compacted that the trees cannot reseed naturally. With the ground cover worn off, the underlying layer of humus is swept away by rains, and a hard, barren soil is all that remains. A forest in this condition cannot regenerate naturally; as old trees die, so does the forest. The park has other scars, as well—the tracks of vehicles that left park roads and the evidence of earlier commercial logging operations.

Sempervirens Fund volunteers have replanted nearly 150 acres of Big Basin by hand since reforestation began there in 1970. Old logging decks, asphalt parking lots, fire-damaged tracts, even run-down campgrounds and picnic areas have all given way to newly planted firs and redwoods. In the past year, Sempervirens has also begun planting ferns and huckleberry bushes provided by the enthusiastic state park agency. Sempervirens' reforestation efforts have become something of a showcase in California; the park's chief interpretive ranger, Harry Batlin, likes Sempervirens' work so much he is endeavoring to have the state put native-tree nurseries in all the state parks so restoration can begin throughout the system.

On a casual trip to Big Basin, most visitors are unaware of the threats to the park's survival that Tony Look and the park encountered not many years ago. During the 1950s and 1960s sawmills were gulping local trees at a ferocious rate and would have consumed more of Big Basin's virgin timber had the lumber companies not been halted at what are now the park's gates. Perhaps more than any other single person, Tony Look was responsible for the end to the logging. He

fought state bureaucracies; enlisted conservationists; even gave up his sleep and scrimped on family expenses to defend Big Basin whenever its integrity as a park was endangered. During these struggles, he gained the experience to make the Sempervirens Fund a success in the 1970s.

Look's conservation career really began long before he came to Big Basin. Many years earlier, Tony had a bitter experience that confirmed him as a lifelong conservationist.

When Tony was six, in 1924, his family moved to the little town of Garberville, California, in the redwoods of Humboldt County. There his father operated a restaurant and cultivated irises. Tony may have inherited the green thumb, for as a boy he brought home from the forest young redwood trees to plant on the family homestead. In those days, much of the county was covered with virgin redwoods, and the creeks and rivers teemed with fish. Tony particularly liked to fish for salmon and trout along the Eel River and to hike along local creeks.

Half a century before Tony's jaunts through the woods, the land had been home to peaceable coastal Native American tribes. By the 1920s and 1930s, however, the Indians had been virtually eliminated, and another kind of destruction became widespread in Humboldt County, altering the entire ecosystem and driving settlers from the land.

The logging industry in California today is said to be laxly monitored, but in the 1920s lumber companies were virtually unregulated. A landowner in Humboldt who wanted to sell his trees would call in a "gypo" or "jackrabbit" lumber company (so named because they would "pop in and pop out"). Its operator would haul a portable sawmill onto a property and clearcut the marketable lumber. Then the lumberman would set fire to the land, stripping the vegetation to prepare the tract for conversion to range grassland or to assure the lumbermen easy access to the property if they came back for a second cut years later. But burning the land had even worse effects than simple clearcutting.

Many of the canyons familiar to Tony during childhood on the Eel River's tributaries were thus stripped by the gypos, including Bull Creek Basin, a 25,000-acre region similar in appearance and vegetation to Big Basin. The consequences of the logging would not be felt fully for a generation.

While Tony went away to college and pursued a career, the scars made by the jackrabbit companies in Humboldt County endured. Plant life with root systems comparable to the original redwood forest and its natural "understory" could not reestablish itself. The long-delayed but inevitable consequences came in 1955.

That year, after a normally wet winter, a torrential storm dumped eleven inches of rain on Humboldt County in about 24 hours. Without sufficient vegetation or rootstock, the wet soil on the steep hillsides began to slip. Bull Creek Basin was hit hard. The land melted off its slopes,

Alexander Lowry

A young forest worker waters a newly planted seedling.

and millions of tons of gravel slid into the stream beds and flowed downstream, filling Bull Creek. Heavily laden floodwaters raced into the basin's alluvial flats, eroding the stream beds and toppling large redwoods nearby. The fallen trees formed natural dams that blocked silt and gravel, causing the rushing waters to spread further into the flats, felling still more redwoods in a self-sustaining, irreversible process.

Unfortunately, the town of Bull Creek, where Tony's father had been raised, lay directly in the floodwaters' path; the entire town was completely buried by silt and gravel. When the waters finally receded, nothing remained to be salvaged. Fortunately, all residents had been evacuated before the disaster, but the Looks experienced a particularly painful loss: the family burial ground far above Bull Creek was completely washed away, with all signs of their ancestors.

The decimation of the native Indian tribes, forfeiture of the timber, reduction of forest wildlife, destruction of basin fisheries and finally the loss of the town completed a cycle. An entire era of life was now over in a land that once had been a natural paradise.

In 1964 a second major flood followed the first and continued the devastation. Tony Look emerged from this disaster resolved to prevent its repetition.

He had joined the Sierra Club in 1940, while still a university student, and he became an increasingly active member. His commitment to conservation was strengthened in 1946 when he returned to visit the Sproul Creek of his boyhood and found no trees on its banks and virtually no fish in its waters. Soon he was tackling environmental problems as chairman of the Sierra Club's regional conservation committee, addressing such issues as coastal management, the proposed California aqueduct project, and public access to San Francisco Bay.

Look's Club work taught him how to mobilize influential people, as well as the general public. "Let people know what the problem is," he says, "and then show them how their energies and money can help solve it." In later years, with maps and leaflets, Look showed people the Big Basin land he wanted bought and explained why its preservation was important. "Telling them the land was needed for open space was not effective enough," he said, so instead he explained the land's wildlife resources, the rarity of virgin forests, the effects of logging, and the recreational values to be preserved for future generations.

In 1965, the Sierra Club asked Tony Look to help extend Big Basin's boundary by 100 yards to prevent logging of some beautiful trees within sight of a scenic park waterfall. Beginning with this limited objective, Look's goal quickly became the incorporation of *all* private basin landholdings into the park.

He started with a vigorous Club campaign to raise the needed funds for the boundary extension. Soon the Save-the-Redwoods League, a well-endowed conservation organization, expressed a renewed interest in the park margin. On the day when cutting started on the coveted timber, League Secretary John DeWitt convinced the Big Creek Lumber Company to stop work, accept half pay-

ment for the land and donate the rest of it to the park for a tax deduction.

In 1968, the park heartland itself was threatened: the Santa Cruz Lumber Company, which had been holding the land until the state could buy it, unexpectedly decided to close its last old-growth-redwood sawmill. If the state would not buy the land immediately, the company said it would have to log the land before the mill shut down.

The only people protecting the land appeared to be a small group of underfunded environmentalists and Tony Look. Where was he supposed to find millions of dollars in time to save the park?

He did not have the answer, but the land *had* to be bought. If the entire watershed were not protected, clearcutting in the basin could erode and disfigure park land below, ultimately destroying the trees. "We could have ended up with the same situation as in Humboldt," he said: the pressure to log was strong, and there were 520 acres of virgin trees.

The Sierra Club did not have the needed money, so Look and five other Club officials decided to try resurrecting a defunct California conservation organization called the Sempervirens Club to raise funds. Revival of the club, renamed the Sempervirens Fund, proved to be a good idea; the group had a prestigious image and some of its original members were still active in conservation.

Then, in 1969, the state formally defined the park's boundaries, identifying some lands that could be bought with state aid. Not long afterward, the Save-the-Redwoods League succeeded in raising half the funds needed to buy these lands, and the state later matched the funds, closing the deal. But parcels vital to Big Basin's integrity remained in private hands, and critical battles ensued.

• Tony Look next formed an *ad hoc* group called the May Day Committee to raise funds needed by May 1 for purchase of another heartland tract—threatened this time by residential subdivision. The state had $120,000—85% of the money needed—but somehow was unable to find the remaining funds in its enormous budget. Working feverishly, Look's small committee managed to raise $20,000 so the state could complete the land purchase and another $8000 to fund Sempervirens' work. His goal was to buy the remaining basin inholdings and adjacent land for the park.

• In its next major effort, in 1974, Sempervirens collected $80,000 through direct-mail solicitation for small contributions and from larger foundation grants. The $80,000 combined with matching state aid and with tax write-offs for the timber interests made it possible for Sempervirens to bring into the park Locatelli Lumber Company land worth seven times that sum.

Suzanne Reed

A volunteer activist prepares the ground for planting trees.

• Seeing no ready source for the enormous amount of money needed to buy a 2200-acre tract of Big Basin virgin redwoods called Rancho del Oso, Look mounted a campaign to raise $15,000 to option the property and buy time. Midway to his goal, the state came to the rescue again, appropriating $2.5 million to buy most of the land.

In Tony Look's six years of volunteering for the Sempervirens Fund, the organization's fund-raising techniques became increasingly effective, and, in 1976, Tony became Sempervirens' paid director.

Sempervirens' reforestation in Big Basin had its origin in a Sierra Club project that began about 1966. The Club made money available from its conservation fund for tree purchases, and Tony supervised plantings by the Loma Prieta Chapter—sometimes 10,000 seedlings in a single day. About 1970 Tony put the plantings under Sempervirens' auspices, charged participants for the trees they planted, and spent the profits to buy land.

Today, the results of combined efforts by the Sempervirens Fund, Save-the-Redwoods League, Sierra Club and other concerned conservationists are a pleasure to behold. The park's unity has been preserved, and one can hike 20 miles on a diagonal across the land without ever leaving the park.

Much of Sempervirens' reforestation has been done in the alluvial flats of the valley that are most accessible to the public and therefore the most overused. Near park headquarters, a campground was fenced off, and Sempervirens volunteers worked redwood chips into the soil to enrich it and provide new ground cover. Between fallen tree limbs, new, yard-high redwoods have begun to take over. Nearby, the asphalt paving of an old parking lot has been torn up and removed; young redwood groves now sprout there. An area of the valley once used for park maintenance vehicles and a wood yard has also been transformed into juvenile forests.

Higher up in the park, Sempervirens has put in a 120-acre stand of Douglas fir, and elsewhere, new eight-foot trees grow in a former roadbed. A few steps away, trees that await planting are stored under the open sky in green nursery cans. Sempervirens buys seedlings from the state's Division of Forestry; some are planted in the bare-root stage, but most are given to a Boy Scout troop that raises them to a hardier age. Sometimes Sempervirens buys older trees from nurseries, but even then the cost is only $1.75 for a "one-gallon tree," and it is $6.00 for a five-gallon plant.

The easiest tree to replant is the bare-root seedling—but it has the worst chance of survival. When Tony demonstrates the process to a new volunteer, he forces a seedling's white, tube-like container into the ground like a stake to make a hole. In less than a minute, he has gently removed the seedling from its plastic tube and tamped in the tree.

Planting the larger trees from nursery cans is also surprisingly easy. Before planting, the roots are soaked in water to improve their contact with the ground. A few turns with a spade in the rich soil of the climax forest makes a suitable hollow for the young tree's roots. The compact root mass is then loosened from the container and positioned in the hole; added earth fills in air spaces. In dry terrain, leftover soil is piled in a two-foot-wide ring around the tree to dam additional rainfall. Where rainfall is heavy, trees are planted in a slight mound to promote better drainage.

Sempervirens' techniques are constantly improving. Between 1964 and 1968 the transplants, Tony explained, had only a 25% survival rate. But Sempervirens has now achieved an 80% to 90% success rate by primarily planting trees that have grown beyond the bare-root stage, and by more careful follow-up.

Most transplants that die do so during the first summer. Therefore volunteers monitor the new trees like houseplants and return to water them every three weeks during summer for two successive years. The planting itself is done in winter under the supervision of experienced volunteers.

Tree planting is not only an integral part of Sempervirens' activities but also an essential source of funding: Sempervirens earns about $18,000 a year by selling trees as gifts or memorials. Half the proceeds provide the group with operating funds, and the rest are used for land acquisition—Sempervirens buys 30 to 40 acres of redwoods each year for preservation as parkland. (Some of the land costs only $300 to $400 an acre.) At this rate, hundreds of acres can be saved in a decade—in a lifetime, thousands.

Far from resting on their laurels, today Tony Look and Sempervirens are also working in California's Castle Rock, Butano, and Cowell state parks, enlarging and reforesting them with redwoods, fir, or madrone—whatever is native to the site. With lumber selling at premium prices today, all forest-conservationist groups face the opposition of corporations that want timber yields—particularly in the national forests—that are far above what forests can naturally replace. For the timber companies, such yields mean higher profits now at the expense of lower long-term forest productivity. Because of the combined impact of the timber interests and heavy recreational land use, there is plenty of forest land available to volunteers for restoration.

Leaving Big Basin one day, Tony reflected on his work. "Most people in Sempervirens just want a place where nature can do its thing. I do this so that if you came back in a thousand years, you could see the natural succession here. That gives me a feeling that time, trees, bugs and all things are connected."

Although his group has had to ransom property from land developers and timber interests, often on the companies' terms, Sempervirens workers in a sense have taken control over an environmental destiny. They may have gained control over only a small area of land so far, but the land touches many lives. Tony Look and the volunteers are recreating a resource for their children and their children's children—so the park will thrive forever. □

John J. Berger is author of Nuclear Power: The Unviable Option.

Illustration by Paul Karapetian

Going It Alone in the Desert

DALE MAHARIDGE

I'M HOME. I'm free. I'm alive again. I'm in southern Utah.

I smile at my friends. They smile back. Their names are Sun, Silence, Wind and Rock.

As usual, for me, I'm once again without human companionship on a backpacking trip into the desert. Isn't it weird to camp alone? Dangerous? Lonely?

Yes, sometimes. But solo desert hiking is the ultimate way of finding yourself. There's nothing like it. We've been taught to shun being alone, that solitude is evil, that going into the wilderness by yourself is courting certain disaster. True, it might be risky, but that shouldn't stop anyone from doing it. You can't imagine what spending even one week by yourself in the thundering quiet of the desert can do for you. It's self-exile, self-examination, self-exultation. It's worth the risk.

This time, I'm heading for The Maze, a part of Canyonlands National Park; it's Christmas Eve and cold. I come at this time of year for many reasons, the greatest being that I won't have crowds of even two or three people sharing the acres of desert with me.

I know for certain I have the whole place to myself—every wonderful cubic foot of silence. I'm the lone spectator of the symphonious concert of open desert, a performance put on just for me.

The first hint I'd find solitude here was being told my two-wheel drive would never make it down the 50-mile, snow-covered dirt road. It was good advice. But good advice is easy to ignore if you like solo hiking; I just put on the tire chains, clenched the wheel and, yelling like a madman, bounced slowly all the way. And when I checked in with the ranger living at the lonely outpost at road's end, he told me I was the first visitor in more than a month.

The snow, nearly knee-deep up here at 7000 feet, makes the rock very slippery and walking a chore. Every step must be taken with care, for everywhere is rock. Slickrock earns its name in the winter.

My pack is heavy—almost 60 pounds. I'm following an alleged trail to the floor of The Maze, 2000 feet below, but the snow hides any cairns, so I wind up navigating by intuition. However, it's been a year since my last visit, and my

intuition fails several times; to continue, I'm forced to lower my pack (and myself) by rope down small cliffs in touchy, gut-wrenching rappels.

Alone, the terrific one-on-one contest with the land is magnified with supreme keenness. The last rappel is especially scary; I stand and shout bitter obscenities at the ice-frosted chute of slickrock I nearly fell down, as if it were a living, breathing entity. I like to get very intimate with the desert. This is the only time I use my voice on these trips—otherwise, I rarely talk aloud. Out here, a voice is an intrusion; it violates the desert law of silence. If someone had been with me, I'd neither scream at the rock nor keep so quiet.

Winter is a difficult time to visit this place—it's too cold and too easy to kill yourself by falling over a cliff. Summer is waterless and very hot. Spring is windy; Fall is too short. Actually, no time is an easy time to come here for most folks who like their wilderness watered, green and accessible.

Still, the desert of southern Utah is made for solo hiking. Unlike other desert regions such as the Mojave, if you plan, you rarely need to go more than one day here without finding a campsite near a source of water.

I make camp. As the sun falls, so does the temperature—at least zero or below. I'll need a fire tonight.

The fact that it's Christmas Eve emphasizes my solitude, felt as deeply as the bitter cold; I build a fire for both warmth and companionship. Its sparks jet upward, bouncing off the canyon wall and into a black void. I designate a solitary juniper set aglow by shimmering firelight as my Christmas tree.

Damn this wonderful silence! I always forget how intrusive it can be. All is hushed, save my noisy, beating heart.

I ask myself, why do I trek here at the loneliest time of year, in such desolation? Perhaps to test my tolerance for solitude, which could easily turn into loneliness—an entirely different, unwanted emotion. Everywhere, people are celebrating with family and friends. I celebrate with silence and seclusion. There are no presents under my juniper, just the desert itself. That's plenty. My reward is the freedom of being here.

Peace on earth. Goodwill to all hibernating lizards and snakes.

This Christmas is nothing but work for me. Traveling in the desert takes twice as long in the winter. I walk the whole day to reach Elaterite Basin, on the edge of The Maze. It's difficult but hauntingly pretty walking—the sun-singed red rock, the burning snow and all sorts of distracting (but pleasing) sights demand I stop and pay homage. I couldn't travel so leisurely with a companion. I decide—or I should say the desert decides for me—not to try to reach The Maze, mostly because walking is arduous but also because my pack's waistband snaps off, the penalty for many years of desert mileage.

So I choose a campsite in the middle of Elaterite Basin. Not just *any* site, mind you—a lofty stone throne in the center of the basin, with hardly any room for a tent on its pinpoint summit. It's a horrible place to camp, unless you want to pretend to be some soothsaying god. It's well suited for contemplating the universe.

After watching the sun abandon me, I caress a meager fire with an armload of wood lugged from below. My camp must look forlorn from afar, a spark of light set atop an altar of rock, a lost island in a sea of ebony waste. Until the fire fades, it robs me of the full splendor of the night sky.

I like solitary star-gazing, especially in the desert. Every school child should be required to take a course in the appreciation of stars. It reduces us to size. A meteorite burns a track across the entire sky, visible a mere fraction of a second, and I theorize this represents our lifespan in relation to the cosmos. My world becomes a cloud of stars wrapped around my head in cold blackness, pierced here and there by the dim forms of buttes and cliffs looking like the skyline of a great, lost Cibolan city. I feel suspended in thin, frigid air, a freak organism away from its own kind, known only to mythical desert spirits.

It is purifying to be alone here. The desert is vast and unfeeling—it certainly doesn't care if I survive. Anything can happen. One careless slip will transform me into pulverized buzzard food at the bottom of a canyon. Yet I want to walk in the buff. Sing. Dance. Anything is normal out here. My mind works on a level unattainable back in civilization; when simple decisions can mean the difference between life and death, there's no hiding behind excuses. I never claim victory over the land, only over myself.

I don't confront myself this way when I hike with a friend or two. Then, the wilderness takes on a different character—I don't *feel* the solitude. There's still a wall between me and truth.

Alone, inward changes come rapidly, and the metamorphosis can be disconcerting. For instance, though it sounds foolish, the desert goblins begin to appear—the ghosts of long-dead Anasazi Indians that haunt lone desert travelers. The old Paiute Indians called them "Oonupits." They play tricks, but they won't hurt the unafraid. I occasionally hear them moaning and shuffling around in the dark or see their tracks at dusk. They seem as real as the rock.

For an avid backpacker, the prime difference and advantage is mental. Why do I try my mind and body this way? I've been searching for a succinct reason for solo desert trekking a long time now. I've found no simple explanation. I think of the hermits of biblical days, wandering in the desert searching for the same thing I am. Sling a pack on your back and head into the desert.

The answer is out there. □

Dale Maharidge is a free-lance writer specializing in the outdoors.

Solo Desert Camping

A solo hike in the desert requires a bit of extra planning. It's always a good idea to let someone know your itinerary—though in many non-park desert areas it can be difficult to find an official. I recommend one week as a good period of time for a solo hike. Anything shorter is too fleeting to be worthwhile. But too long can be just as bad because then solitude becomes tiresome.

One disadvantage of solo hiking is that you can't double up on community gear, such as tents, stoves or ropes. But the equipment needed for solo hiking is the same as you'd take with a partner.

Of course, in the heat of a desert summer, one gallon of water per day just for drinking is a must. You can live handsomely without companionship, but not without water. This is a critical warning. People unfamiliar with the desert usually scoff at it—some who go out there don't believe they need so much water, and some never come back. The desert is at its best and safest in the spring and fall.

Finally, a good therapeutic tool to take along is a notebook for recording thoughts, to help you remember the desert reality once you're back in the city. Your jottings can be at least as evocative as photographs you take.

Wilderness Adventure

Don't Miss All The Fun

Join a Sierra Club wilderness outing and find out why the Club is working so hard to save those wonderful places. After all, one of our goals is to explore and enjoy as well as protect the wild areas of the world.

Club outings make it easy, even for beginners, to enjoy the wilderness experience in a manner not soon to be forgotten. We've had 78 years' practice in leading groups of young and old, experts and greenhorns. So, whether you choose a jaunt in the Sierra, a raft trip on the Snake, or something a a bit more daring in the Himalayas, Club leaders can take you there and get you back, eager for another adventure next year.

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You will receive your free catalog (to be mailed in early January) if you got the 1979 Catalog. If you didn't receive a 1979 Catalog—or if you've moved : send a change of address card (if appropriate) or a postcard with your name and address to:

Outing Catalog
530 Bush Street
San Francisco, CA 94108

Plan a Vacation You'll Never Forget

While winter weather keeps you inside, use your catalog to select a wilderness adventure that fits you and start dreaming. You will never forget your Sierra Club trip.

NOW—turn the page for a preview of early 1980 outings . . .

1980 Sierra Club Outings

M. W. Barry

Gila Wilderness, New Mexico

AS USUAL, the Spring Outings will be concentrated in the desert and canyons of the Southwest. But don't forget the other trips: a wilderness outing by canoe in the Okefenokee Swamp, camping on Hawaiian beaches, ski-touring in Minnesota or the Adirondacks, and leisurely boat trips off the Mexican coast.

Sierra Club trips average from 12 to 30 members and are generally organized on a cooperative basis; trip members help with the camp chores, including food preparation and cleanup under the direction of a staff member. First-timers are often surprised at the satisfaction derived from this participation. To determine which outing best fits your needs, read the following trip descriptions carefully and see "For More Details on Spring Outings." Reservation requests are being accepted now for all spring trips. See "Reservation/Cancellation Policy for Sierra Club Trips" and trip application form (p. 45).

(282) Arizona Ski Touring, Mormon Lake, Arizona—March 9-15. Leader, John Ricker, 2610 N. 3rd St., Phoenix, AZ 85004. Cost: $180.

Snow in the mountains of Arizona in early spring is ideal for ski touring. Trips will be run daily for all levels of skiers. There will be a short backpack trip to introduce participants to snow camping. We will spend the other nights in a cabin at Mormon Lake near Flagstaff. Depending on snow conditions, our locale will be flexible. You should have skied at least once; otherwise no experience necessary; skis may be rented. Leader approval required.

(26) Spring in Hawaii: Molokai and Lanai—March 28-April 5. Leaders, Fran and Gordon Peterson, 222 Royal Saint Ct., Danville, CA 94526. Cost: $420.

Our trip will begin on the island of Molokai, where we will have a chance to visit the leper colony at Kalapapa. From there we move to the beautiful beach at Hulopoe Bay on Lanai. Here we will explore old village sites, walk along Shipwreck Beach, study ancient petroglyphs and still have ample time

to enjoy excellent swimming and snorkeling.

(27) Panamint Mountains, Death Valley, California, Burro Trek—March 30-April 5. Leader, John McClure, 75 Castlewood Dr., Pleasanton, CA 94566. Cost: $250.

The Panamints form the western boundary of Death Valley. Although not high, they rise abruptly from the desert so we will be able to get panoramic views of Death Valley to the east and Panamint Valley to the west. Spring is an ideal time to visit the area—the snow is clearing, and the wild flowers are beginning to bloom.

(28-E) Natural History of the Anza-Borrego Desert Base Camp, California —March 30-April 5. Naturalist, Will Neely. Leader, Bill Kershaw, 300 Shellgate Rd., Alameda, CA 94501. Cost: $185.

Our Easter camp will be located near Borrego Springs, some 90 miles northeast of San Diego, in California's largest state park. The outing is designed for those who would like to explore and study the natural wonders of the living desert with a naturalist. We will use members' cars to radiate out to various points of interest where our easy day-hikes will begin.

(29) Grand Canyon Oar Trip, Arizona—March 31-April 13. Leader, Kurt Menning, 2151 Oakland Rd., #404, San Jose, CA 95131. Cost: $920.

This is perhaps the greatest combination of canyon beauty, majesty, detail and variety of nature to be found anywhere. Spring wild flowers and a less-crowded river should enhance this trip. The very sensitive approach of the outfitter is important to Sierra Club members, as we will stop frequently to see, feel, smell and learn about the many wonderful things and places normally missed on most commercial trips. Each 17′×7′ inflated raft carries only 4 to 5 persons and a professional oarsman. Minimum age is 15 (18 solo). Cost includes round-trip transportation from Flagstaff, Arizona.

(30) Ventana Wilderness Highlight, Los Padres National Forest, Big Sur, California—April 6-13. Leader, John Doering, 6435 Freedom Blvd., Aptos, CA 95003. Cost: $365.

The California coast is characterized by its diversity. Dark canyons filled with redwoods alternate with open groves of pine or madrone or with rich grassy meadows. Bright chaparral-covered slopes offer views of the Pacific Ocean. Part of the trip will be through the area affected by the 1977 Marble Cone fire. We will walk 6-10 miles a day with an occasional 1000-foot elevation gain. One layover day.

(31) Dismal Swamp, Canoe, Norfolk, Virginia—April 13-19. Leader, Herb Schwartz, 2203 St. James Pl., Philadelphia, PA 19103. Cost: $165.

From Norfolk south into North Carolina lies the Dismal Swamp, an area of lowlands, lakes and the Northeast River. Early spring is ideal for observing the abundance of snakes, birds and budding flora, yet prior to mosquito season. We'll be meeting local residents to discuss the swamp's history and future. Two stops are layover days, and day and night hiking are available. Several car portages are necessary to explore this diverse area, but the canoeing is easy.

(32) Okefenokee Swamp Canoeing, Georgia—April 28-May 3. Leader, Lincoln E. Roberts, 6686 Styers Ferry Rd., Clemmons, NC 27012. Cost: $165.

A one-day orientation precedes five days of canoeing this true black-water swamp, sleeping on platforms at night. Clean, unpolluted water, grassland prairies and moss-draped cypress hammocks are home to alligator, bear, deer, otter and more than 200 species of birds. The mosquitos will remind us of human frailties. Leisurely to strenuous, depending on weather and water level. Minimum age 14. Leader approval required.

(33) Salt River Raft Trip, Arizona—May 25-30. Leader, John Ricker, 2610 N. 3rd St., Phoenix, AZ 85004. Cost: $180.

The Salt River originates in the White Mountains of eastern Arizona and flows southwest across the state. Due to snow melt in late spring, the 50-mile stretch from Highway 60 to Roosevelt Lake is ideal for whitewater boating. Three- or four-man rafts will be provided. Those with experience are encouraged to bring kayaks or inflatable boats. No open canoes will be permitted. Some whitewater experience is recommended although a few novices will be accepted. Leader approval required.

Knapsack Trips

Knapsack trips offer the greatest freedom for exploring wilderness because everything you need is on your back. Young and old are today showing an eagerness for the adventure, solitude and personal challenge of knapsacking. Sierra Club trips provide all these rewards as well as the example of how to knapsack knowledgeably and comfortably. Knapsacking is strenuous activity, however. For a trip of a week, the starting load may weigh from 35 to 40 pounds, but the exhilaration and extra physical effort make you feel more a part of the wilderness. With today's new designs in backpacking equipment, almost anyone in good health and physical condition can enjoy knapsacking.

All trips require members to help with the cooking and camp chores, although the leaders provide commissary equipment and food. Trip members bring their own packs, sleeping bags, shelter and clothing.

Trips are rated as *leisure (L), moderate (M) or strenuous (S)*, or levels in be-

Boat and Ski Trips

Descriptions of these previously published trips can be obtained from the Outing Department.

Trip Number	E=Educational outing •=Leader approval required	Date	Trip fee (Incl. Deposit)	Deposit	Leader
	BOAT TRIPS				
430	Whale-Watching Leisure Boat Trip, Baja, Mexico	Feb. 16-23	$730	$70	Steve Anderson
431	River of Ruins (Rio Usumacinta) by Raft	Feb. 20-29	895	70	Ruth Dyche
432	Sea of Cortez Leisure Boat Trip, Mexico	Mar. 29-Apr. 5	720	70	Lynn Dyche
	SKI TRIPS				
277	•Maine Wilderness Ski Tour Base Camp	Jan. 13-19	$245	$35	Frank Roberts
278	Superior-Quetico Ski and Snowshoe, Minnesota/Ontario	Feb. 24-Mar. 1	240	35	Stu Duncanson
280	Ski Touring Clinic, Steamboat Springs, Colorado	Jan. 5-10	110	35	Sven Wiik
281	•Adirondack Ski Touring, New York	Jan. 20-26	235	35	Walter Blank
282	•Arizona Ski Touring (See page 00 of this issue.)	Mar. 9-15	180	35	John Ricker

tween, by the individual leader. The ratings are made as accurately as possible on the basis of total trip miles, cross-country miles, the aggregate climb, terrain difficulty and elevation.

Strenuousness is measured also in less obvious ways. On desert trips members are often required to carry liquids that significantly increase their pack loads. Canyon trips obviously entail steep descents and climbs, and temperatures may vary considerably from top to bottom.

The demands of knapsacking require that the leader approve each trip member based on responses to questions about previous knapsacking experience and equipment. If you lack experience or have never knapsacked at high elevations for any length of time, you may qualify for one of the less strenuous trips by going on weekend knapsacking outings prior to the trip. Unless otherwise stated, minimum age on knapsack trips is 16, although qualified youngsters of 15 are welcome if accompanied by a parent.

(35) Desert Spring, Superstition Wilderness, Arizona—March 2-8. Leader, John Peck, 4145 E. 4th St., Tucson, AZ 85711. Cost: $135.

This trip loops through the heart of rough, photogenic mountains, over trails and rocky canyon bottoms. We will see the lower desert flora such as the giant saguaro cacti, and wild flowers beside running streams if spring rains are plentiful. A mid-trip layover day among oak trees near a well-preserved ancient cliff dwelling will be appreciated. Excellent food is a feature of this trip. Rated moderate to moderately strenuous, depending on your condition.

(36) Grand Canyon, Arizona—March 29-April 5. Leader, Tom Pillsbury, 1735 Tenth St., Berkeley, CA 94710. Cost: $190.

This will be a strenuous backpack trip over unmaintained trails and cross-country in Grand Canyon National Park and nearby regions. There will be no layover days. Some use of climbing ropes may be necessary. Rated S.

(37) Ventana After the Fire, Los Padres National Forest, California—March 29-April 5. Leader, Bob Berges, 974 Post, Alameda, CA 94501. Cost: $115.

Two years ago, following a severe California drought, lightning-ignited forest fires roared through the valleys and over the ridges of the Ventana Wild Area. Can such an area come back? You will be amazed at nature's reconstruction. To see for yourself, join this moderately paced circle knapsack trip in the usually pleasant West Coast spring. We will begin and end the trip at Pfeiffer Big Sur State Park. Don't worry about gasoline shortages—airlines and greyhound buses reach Monterey, and there is a connecting bus direct to the roadhead. Rated M.

(38) North Rim, Grand Canyon—April 13-19. Leader, Bill Wahl, 325 Oro Valley Dr., Tucson, AZ 85704. Cost: $185.

In seven full days of hiking we will go from the 7600-foot-high Powell Plateau down Saddle Canyon to the Colorado River, at 2000 feet. The first three days will be cross-country, with some bushwhacking. Some use of ropes may be necessary. Rated S.

(39) Guadalupe Mountains National Park, Texas—April 20-26. Leader, Steve Hanson, 14734 Hornsby Hill Rd., Austin, TX 78734. Cost: $170.

Our 40-plus miles will take us past Lost Peak, into the Bowl, and along the rim of Pine Springs Canyon with views of Guadalupe Mountain, Texas' highest. Two of the days will have day hikes, one of them a drop into famed McKittrick Canyon. We will carry no more than half our supplies at one time, but this will include our water. Highest point, 8400 feet. Rated M-S.

(40) Kanab Canyon-Tapeats Creek, Grand Canyon, Arizona—May 10-17. Leader, Ginger Harmon, Berth 20, Issaquah Dock, Waldo Point Harbor, Sausalito, CA 94965. Cost: $165.

We will descend from the North Rim by way of Kwagunt Hollow, Jumpup, and deep, narrow, twisting Kanab Canyon. Along the way we will explore side canyons and swim in clear pools. At the Colorado River we will go upstream to Deer Creek Falls and Tapeats Creek. On our hike out, we will visit the spectacular Thunder River Falls and enjoy panoramic views from the Esplanade. Rated S.

(41) West Virginia Highlands—May 18-24. Leader, Dick Williams, 603 S. Walter Reed Dr., Apt. 662-B, Arlington, VA 22204. Cost: $125.

We will explore the varied scenic high country of northeastern West Virginia and camp in Dolly Sods and Laurel Fork of the Cheat River wilderness areas. Hiking distances with full packs on the three moving days will not exceed five miles. The trip will feature lots of day hiking in areas near the campsites or within a short driving distance. Rated L.

(42) Dark Canyon Primitive Area, Utah—May 18-24. Leader, Gene Andreasen, 183 S. Orange Dr., Los Angeles, CA 90036. Cost: $215.

Dark Canyon Creek descends from the pastoral western slopes of Utah's Elk Ridge, flows northwesterly and finally enters Lake Powell at its northern end. From our trailhead north of Natural Bridges Monument we will proceed down Woodenshoe Canyon and then work our way through the increasingly tortuous, sculptured Dark Canyon, finally to be met by a boat at Lake Powell. Rated M-S.

(43-E) Grand Gulch Natural History, Utah—May 24-31. Instructor, Mary Coffeen. Leader, Pete Nelson, 5906 Dirac St., San Diego, CA 92122. Cost: $210.

This BLM Primitive Area, near Natural Bridges National Monument, has canyons with high cliffs, colorful sandstone, 180° canyon bends, pinnacles and natural arches that are scenic delights. Indian cliff dwellings, ruins, petroglyphs and pictographs are evidence that early man lived here. We will enter via Slickhorn Canyon and exit at Collins Spring, exploring side canyons on the way. Rated L.

(44) Pink Beds of Pisgah National Forest, North Carolina—June 1-8. Leaders, Marilyn and Cliff Ham, 3729 Parkview Ave., Pittsburgh, PA 15213. Cost: $135.

Early in June the Catawba rhododendrons blossom in such profusion that the settlers called the area "The Pink Beds." This leisure knapsack trip allows plenty of time for observing the flowers, birds and other beauties of spring in the mountains. Pisgah was the first national forest in the United States, part of the Vanderbilt estate and the site of the Cradle of Forestry. Rated L.

Service Trips

(46) Superstition Wilderness, Tonto Forest, Arizona—March 30-April 5. Leader, Rod Ricker. PO Box 807, Cottonwood, AZ 86326. Cost: $65.

This is a knapsack-oriented trail maintenance trip in the seldom-used eastern part of the Superstition Mountains. We will move our base camp and have time for several side trips. Expect warm days with desert flowers in the lower elevations and a slight chance of snow in the higher elevations.

For More Details on Spring Outings

For more information on any of these trips, write the Sierra Club Outing Department for the specific supplement on that outing. Trips vary in size and cost, and in the physical stamina and experience required. New members may have difficulty judging from these brief write-ups which trips are best suited to their own abilities or interests. Don't be lured into the wrong one! Ask for the trip supplement before you make your reservation, saving yourself the cost and inconvenience of changing or cancelling a reservation. The first five supplements are free. Please enclose 50 cents each for extras. Write or phone the trip leader if any further questions remain.

Clip coupon and mail to: 11/79

SIERRA CLUB OUTING DEPARTMENT
530 Bush Street, San Francisco, CA 94108

Sierra Club Member _____Yes _____No

Send Supplements:

#____ #____ #____ #____ #____

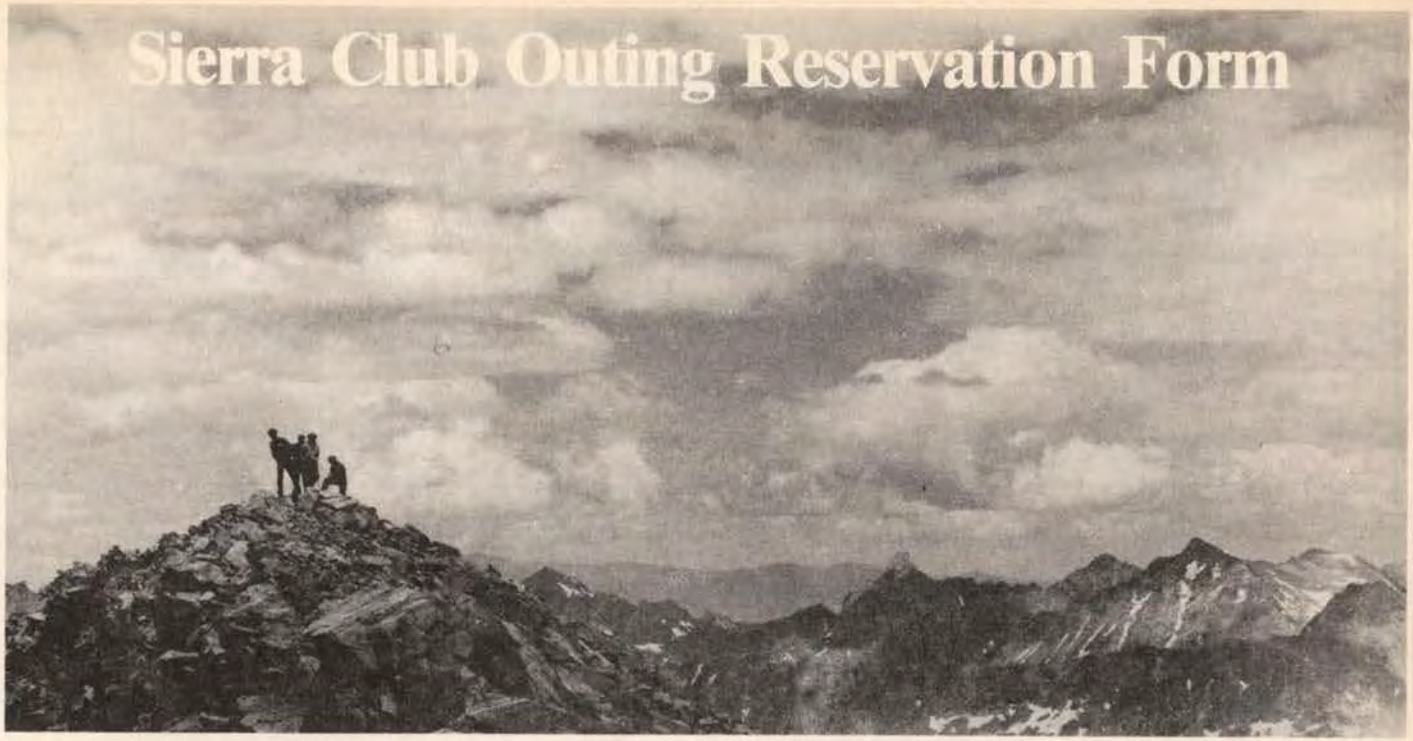
Name _____

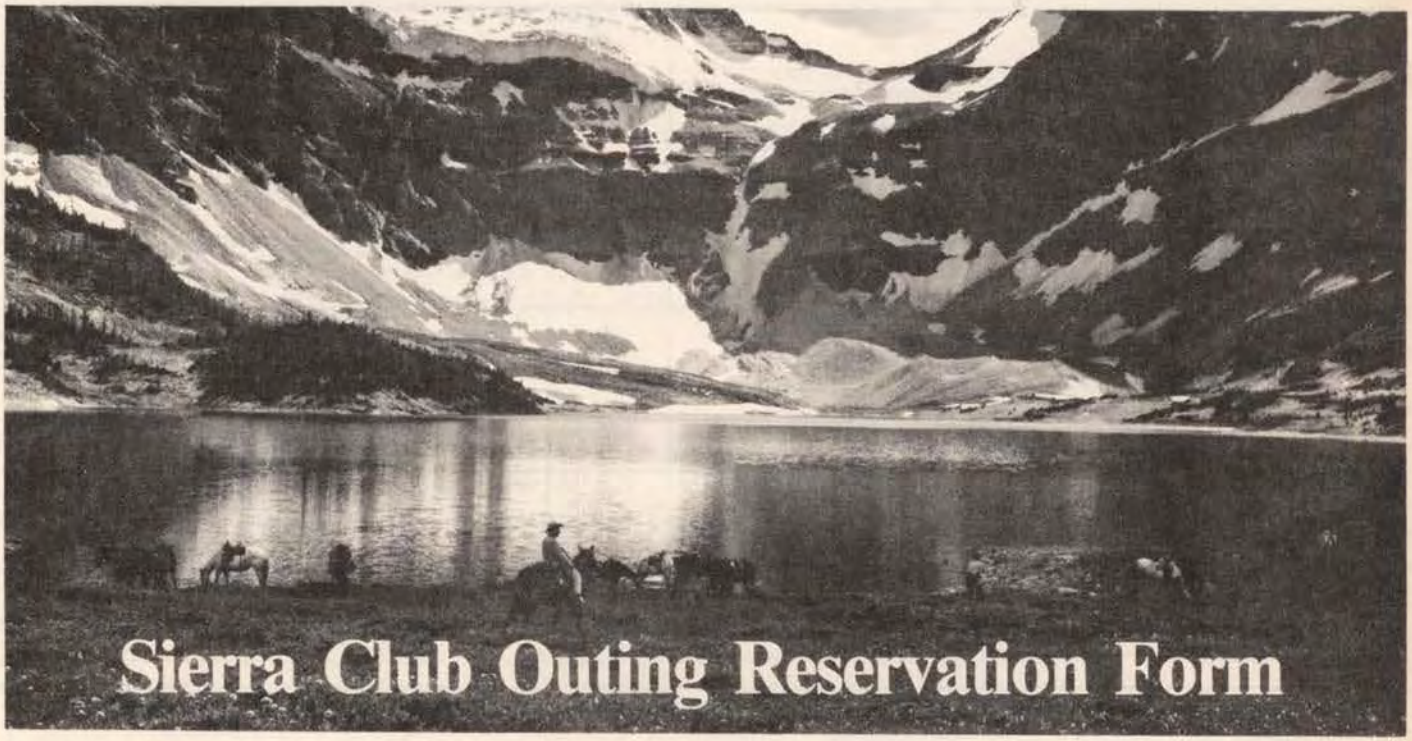
Address _____

_____

Enclosed is $ _____: $.50 for every supplement requested in addition to the first 5.

Sierra Club Outing Reservation Form





Sierra Club Outing Reservation Form

MEMBERSHIP NO.	Trip number	Trip name	Departure date
Print Name: Mr. Mrs. Ms. FIRST LAST	DEPOSIT ENCLOSED $	(Leave blank)	No. of reservations requested
Mailing Address	**If you have already received the trip supplement, please check.** ☐		
City / State / Zip Code	Residence telephone (area code)	Business telephone (area code)	

PLEASE PRINT **YOUR** NAME AND THE NAMES OF ALL FAMILY MEMBERS GOING ON THIS OUTING	Age	Relationship	Membership No.	How many trips have you gone on? Chapter	National
1.					
2.					
3.					
4.					
5.					

How did you first learn of Sierra Club outings? Friend ☐ Sierra ☐ Other (please describe) _____

MAIL TO: SIERRA CLUB OUTING DEPT.—P.O. BOX 7959, SAN FRANCISCO, CA. 94120

MEMBERSHIP NO.	Trip number	Trip name	Departure date
Print Name: Mr. Mrs. Ms. FIRST LAST	DEPOSIT ENCLOSED $	(Leave blank)	No. of reservations requested
Mailing Address	**If you have already received the trip supplement, please check.** ☐		
City / State / Zip Code	Residence telephone (area code)	Business telephone (area code)	

PLEASE PRINT **YOUR** NAME AND THE NAMES OF ALL FAMILY MEMBERS GOING ON THIS OUTING	Age	Relationship	Membership No.	How many trips have you gone on? Chapter	National
1.					
2.					
3.					
4.					
5.					

How did you first learn of Sierra Club outings? Friend ☐ Sierra ☐ Other (please describe) _____

MAIL TO: SIERRA CLUB OUTING DEPT.—P.O. BOX 7959, SAN FRANCISCO, CA. 94120

Sierra Club Trips
Reservation/Cancellation Policy

Eligibility: Our trips are open to Sierra Club members, applicants for membership and members of organizations granting reciprocal privileges. You may include your membership application and fee with your reservation request.

Children must have their own memberships unless they are under 12 years of age.

Unless otherwise specified, a person under 18 years of age may join an outing only if accompanied by a parent or responsible adult or with the consent of the leader.

Applications: One reservation form should be filled out for each trip by each person; spouses and families (parents and children under 21) may use a single form. Mail your reservation together with the required deposit to the address below. No reservations will be accepted by telephone.

Reservations are confirmed on a first-come, first-served basis. However, when acceptance by the leader is required (based on applicant's experience, physical condition, etc.), reservations will be confirmed upon acceptance; such conditions will be noted. When a trip is full, later applicants are put on a waiting list.

Give some thought to your real preferences. Some trips are moderate, some strenuous; a few are only for highly qualified participants. Be realistic about your physical condition and the degree of challenge you enjoy.

The Sierra Club reserves the right to conduct a lottery to determine priority for acceptance in the event that a trip is substantially oversubscribed shortly after publication.

Reservations are accepted subject to these general rules and to any specific conditions announced in the individual trip supplements.

Deposits: The deposit is applied to the total trip price and is NONREFUNDABLE unless (1) a vacancy does not occur or you cancel from a waiting list, (2) you are not accepted by the leader, (3) the Sierra Club must cancel the trip.

Trips priced to $499 per person	$35 per individual or family application
Trips priced $500 and more per person (except trips listed as "FOREIGN")	$70 per person
Trips listed under "FOREIGN" section	$100 per person

Payments: Generally, adults and children pay the same price; some exceptions for family outings are noted. You will be billed upon receipt of your application. Full payment of trip fees is due 90 days prior to trip departure. Trips listed under "FOREIGN" section require payment of $200 per person 6 months before departure. Payments for trips requiring the leader's acceptance are also due at the above times, regardless of your status. If payment is not received on time, the reservation may be cancelled and the deposit forfeited.

No payment (other than the required deposit) is necessary for those waitlisted. The applicant will be billed when placed on the trip.

The trip price does not include travel to and from the roadhead nor specialized transportation on some trips. Hawaii, Alaska, Foreign and Boat trip prices are all exclusive of air fare.

Transportation: Travel to and from the roadhead is your responsibility. To conserve resources, trip members are urged to form car pools on a shared-expense basis or to use public transportation. On North American trips the leader will try to match riders and drivers. On some overseas trips, you may be asked to make your travel arrangements through a particular agency.

Cancellations: Notify the Outing Department by letter or by phone if you must cancel from a trip. Any refund will be based on date this notice is received. Refunds *less the nonrefundable deposit* will be made as follows:

1.	60 days or more prior to trip	full amount of remaining balance
2.	14-59 days prior to trip	90% of remaining balance
3.	4-13 days prior to trip	90% of remaining balance if replacement is available from a waiting list. 75% of remaining balance if no replacement is available from a waiting list.
4.	0-3 days prior to trip	no refund.
5.	"No-show" at roadhead, or if you leave during a trip	no refund.

The Outing Program regrets that it cannot make exceptions to the cancellation policy for any reason, including personal emergencies. Cancellation for medical reasons is often covered by traveler's insurance, and trip applicants will receive a brochure describing this coverage. You can also obtain information from your local travel and/or insurance agent.

Transfers: A $35 fee is charged for transfer of any confirmed reservation on a trip priced up to $499. Transfer of a confirmed reservation from a trip priced $500 and more per person or a transfer 0-3 days prior to trip departure is treated as a cancellation. No transfer fee is charged if your application is pending the leader's acceptance, or if you transfer from a waiting list.

Medical Precautions: On a few trips, a physician's statement of your physical fitness may be needed, and special inoculations may be required for foreign travel. Check with a physician regarding immunization against tetanus.

Emergency Care: In case of accident, illness or a missing trip member, the Sierra Club, through its leaders, will attempt to provide aid and arrange search and evacuation assistance when the leader determines it is necessary or desirable. Cost of specialized means of evacuation or search (helicopter, etc.) and of medical care beyond first aid are the financial responsibility of the ill or injured person. Medical and evacuation insurance is advised, as the Club does not provide this coverage. Professional medical assistance is not ordinarily available on trips.

The Leader Is in Charge: At the leader's discretion, a member may be asked to leave the trip if the leader feels the person's further participation may be detrimental to the trip or to the individual.

Please Don't Bring These: Radios, sound equipment, firearms and pets are not allowed on trips.

Mail Checks and Applications to:

Sierra Club Outing Department
P.O. Box 7959, Rincon Annex
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Tragedy in Committee?

Alaska in the Senate

EDGAR WAYBURN

In 1979, as in 1978, the Senate Energy and Natural Resources Committee has labored mightily on the Alaska National Interest Lands Bill, and once more, in the estimation of conservationists, it has brought forth a mouse. In 1978, 44 sessions were held to "mark up" that year's bill; the result was S.9, a far-weaker measure than H.R. 39, passed by the House of Representatives overwhelmingly in May 1978. In 1979, after the House again passed excellent legislation in May, the Senate Energy and Natural Resources Committee has held a dozen more mark-up sessions, earnestly and patiently trying to please the various interests that want to foster as much exploitation and development of Alaska as possible. The result has been the further degradation of the committee bill—a bill previously termed "unacceptable" by conservationists.

This result, even though disheartening, is not surprising. It demonstrates clearly the power of oil, timber and hard-rock-mining interests, as well as the bias of the dominant Alaska media and the Alaska state establishment. It reflects the sky-rocketing prices of gold and other minerals and our fears of energy crises and oil shortages.

Below is a table of major differences between the Senate Energy Committee bill, previously called S.9 and now renamed H.R. 39, and the House-passed, Udall-Anderson bill, also called H.R. 39.

Conservation Systems	**Senate Bill** (acres)	**House Bill** (acres)
National Parks	42,800,000	44,030,000
National Wildlife Refuges	41,400,000	79,543,000
National Wild Scenic Rivers	1,200,000	1,500,000
*National Forests	8,300,000	1,780,000
*National Conservation Areas (BLM)	1,200,000	0
Total	94,900,000	126,853,000
Wilderness Designation		
National Parks	29,700,000	34,120,000
National Wildlife Refuges	4,350,000	27,465,000
National Forests	4,250,000	5,875,000
Total	38,300,000	67,460,000

*Much less protection is accorded in these categories than in the others.

Crucial areas slated for wilderness in the House-passed bill but deleted by the Senate committee include half of Admiralty Island, the southern portion of Misty Fjords, part of West Chichagof-Yakobi Island, 3 million acres in Gates of the Arctic National Park, and most of the Arctic National Wildlife Range.

Some of the new provisions in the Senate committee bill this year include:

- A measure offered by Henry Bellmon (R-Oklahoma) that encourages exploration of the Arctic National Wildlife Range (ANWR) by petroleum companies. As introduced, S.9 already contained a study program to allow the government to explore for oil and gas in lands north of the 68th parallel. The Bellmon amendment excludes the National Petroleum Reserve-Alaska (NPR-A) from the study, thereby focusing attention on exploration of the ANWR. The amendment also stipulates that private industry be permitted to carry out the exploration—further increasing development pressures.
- Measures offered by Senator Durkin (D-New Hampshire) that would classify 500,000 acres as national preserves rather than as national parks in Wrangell-St. Elias National Park. This is intended to increase the acreage open to hunting of the nation's largest population of Dall sheep.
- Measures to weaken sections on subsistence and transportation, to open national preserves to commercial trapping and to permit illegal cabins within conservation system units.
- A measure that gives the Interior Secretary discretionary power to allow mining and oil and gas development in areas protected as national wild and scenic rivers.
- A measure that would authorize the Forest Service to offer the Sheeatika (Sitka) Urban Corporation logging rights and land on Admiralty Island.
- Misty Fjords would become a national monument under Forest Service jurisdiction. The U.S. Borax mine site would be within the monument, but six miles away from the wilderness area. The land south of the mine would be designated a "special management area."

Although the conservationists' influence on the Senate committee has been very limited, it is heartening that a new and able champion has emerged. Freshman Senator Paul Tsongas (D-Massachusetts) has gained the respect of foe and friend alike in preventing the adoption of some of the worst proposals.

The committee bill is now so bad that a substitute bill must be offered in the Senate (even as one was offered and passed in the House). Support for protection of Alaska's irreplaceable natural resources is undoubtedly greater in the full Senate than in the committee.

In 1978, Senator Mike Gravel (D-Alaska) filibustered all efforts to get the bill to the Senate floor. This year he has participated very actively in the committee's proceedings and has been given thorough consideration; some of his amendments have been accepted. Should he try to filibuster action on the floor, the Senate could quickly and justifiably vote for cloture.

The timing of full Senate action on the Alaska legislation remains uncertain. In the end, a conference committee from the two houses of Congress will determine the final status of Alaska's national interest lands. For this to be properly balanced between protection and exploitation, the Senate bill must be much stronger than the committee-passed bill. □

Edgar Wayburn chairs the Club's Alaska Task Force; he is also a member of the National Park System Advisory Board.

How to Take Photographs in Winter

The Snowbound Landscape

Text and Photographs by
CHUCK PLACE

Yosemite Valley has never looked so beautiful. Snow is falling, everything is blanketed with a soft coating of powdery white, and you have plenty of film for your camera.

Trouble begins immediately. Your tripod's legs are frozen shut, the light meter gives strange readings, and every time you breathe, the camera eyepiece fogs. So you abandon the tripod, holding your breath to steady the camera in your hands, and you shoot each scene at several settings. Expose enough film, and some are bound to come out. Right?

Not necessarily.

As you look at the processed slides, the truth dawns. Most of the transparencies are either over- or underexposed, and all are flat and lifeless; one roll of film broke in the middle, and the others are marred by bright blue streaks and spots. A disaster!

Yet all these problems can be overcome. Photographing in snow presents special problems for which there are special solutions—many of which can be applied before you step outdoors again.

The combined conditions of extreme cold and low humidity create mechanical difficulties; the oil in tripods, shutters, and in the focusing machinery of large-format cameras can become thick and sluggish.

For the tripod, the remedy is to clean all parts thoroughly with a dry rag, making certain to remove the dirt frequently found in the threads of the legs. A light coat of all-purpose oil will keep these parts moving.

To avoid sticking, have the lenses pulled apart and cleaned professionally. Shutters should also be cleaned, but if a shutter sticks occasionally in normal weather, it probably has old, weak springs, and it will invariably jam in snow. The springs can be replaced by a camera dealer.

Replace old batteries in cameras and light meters. Batteries put out less current as the outside temperature drops; a partly depleted battery may indicate incorrect exposures or fail completely during cold weather. A selenium-cell meter, which does not use batteries, would be excellent insurance.

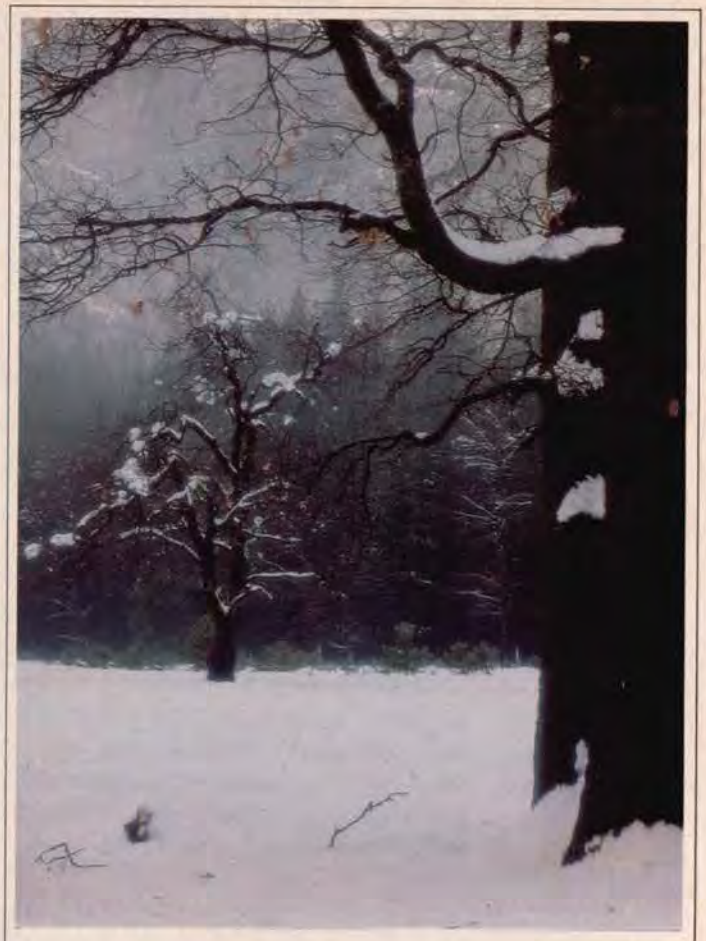
Now that the equipment is prepared for cold weather, how can its condition be maintained in the field? First, keep light meters, extra batteries, and cameras with

built-in light meters beneath an outer garment, for warmth. The photographer's physical exertion results in the release of moisture, in turn causing meters, lenses and film to fog if they are kept too close to the body. The best compromise is storing equipment under a loose outer parka; the temperature there is warmer than outside, yet water vapor is not generally a problem.

Along with a first-aid kit and such survival tools as a knife, nylon cord and matches, always pack a large rain poncho. Wear it in rain or snow and drape the front over the equipment in use. This makes changing film, lenses and filters a drier procedure (though still troublesome) but it may trap breath vapor inside the waterproof poncho "tent," fogging filters, lenses, a view-format camera's ground glass and even the magnifier. If the fogging persists, allow the equipment to clear for a minute or two in the open air before shooting.

Wisps of mist, reflected light and snow-covered rocks emerge from the ebony waters of the Merced River in Yosemite Valley.

Even under a protective poncho "tent," loading film in a frosty environment presents hazards. Film becomes extremely brittle in cold weather and must be wound slowly and gently to prevent splitting. A more subtle demon in cold weather is static; film wound quickly rubs against the cold, dry inner surfaces of the camera, giving off static electricity. The frequent result is blue "lightning" and "sparks" appearing on the processed transparencies. This is a crucial problem with view-format cameras that use sheet film. Pulling the dark slide or inserting the film holder too quickly can destroy a transparency.



The strong lines of the bare oaks stand out against the light snowfall that softens the landscape and veils the walls of Yosemite Valley.

Tripods can be tricky in deep snow. Besides the problem of leg locks sticking, tripod legs can be bent badly if they are spread completely before being forced into the snow. Since the legs continue to spread as they are forced down, the deeper the snow, the less the legs should be spread initially. When the tripod is in place, tamp down the snow over the ends of the legs to lock them in place. Shallow snow can be treated like bare ground; a spot is first compressed for each leg before inserting it.

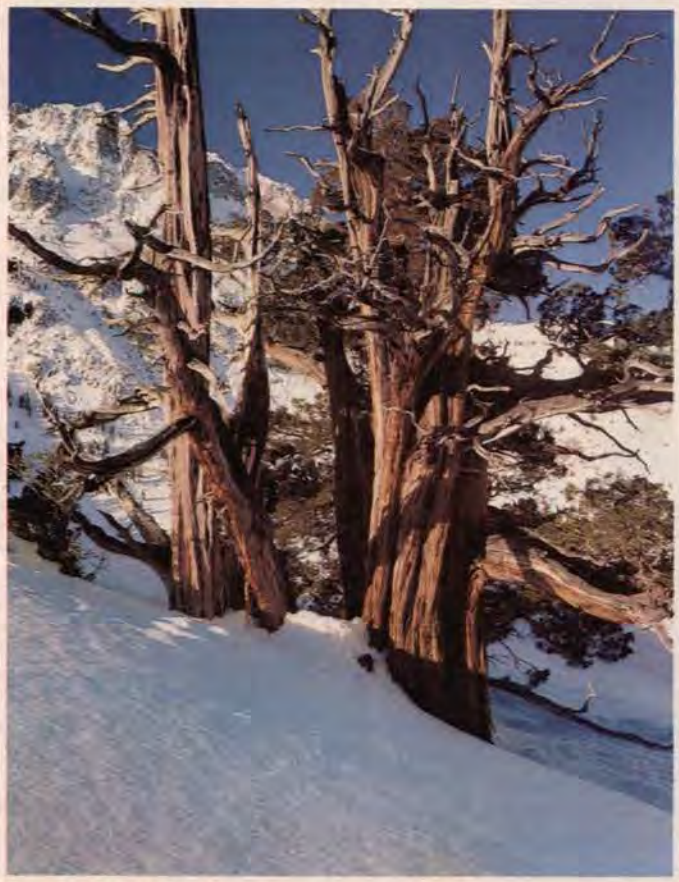
Even when the technicalities of winter work are mastered, the results can often be dull and uninteresting. The winter landscape is subtle, and the photographer needs a subtle eye for composition, lighting and color. Winter is not an inherently colorful time of year, so any stray windfalls of color can be accentuated to great effect.

Winter is one time of year to make full use of blue skies and bright sunshine. Look for color in last fall's leaves, backlit against a dark background, for subject impact. Even the green moss on tree trunks, the bark itself or a few wisps of warm brown grass can add contrast to the cool tones of winter.

It is possible to become aware of the subtle shades of color anywhere. In California's Sequoia National Park, for example, bark on the west side of each giant Sequoia is a muddy brown, and bark on the east side is a much brighter shade of reddish brown.

Mountain valleys are not especially colorful in winter. Yet leaves often cling to trees late in the season, and morning and evening light can set aglow the surrounding peaks and valley walls with delicate golds and pinks, contrasting dramatically with the blues and whites of the valley floor. As in all forms of art, awareness is the key.

A snowy landscape acts as a giant reflector, effectively filling in shadows. This makes side and back lighting extremely effective tools when there is little detail in shadowy areas. This approach, combined with a low angle of light, can produce dramatic, sweeping shadows across the snow.



Side lighting accentuates the volume and texture of this juniper near June Lake in California's Sierra Nevada. Early morning light brings out the warm tones of bark and wood, providing contrast to the cool tones of this snowy scene.

Overcast days can make photography problematic. Any existing warm tones will be dulled by the lack of direct light, and the reflectivity of snow will make the lighting even flatter. On such days, relax with a gallon of hot chocolate and wait for the sun.

Falling snow brings a singular beauty to landscape, but creates its own variety of technical problems. Snow quickly becomes water upon meeting a warm surface such as a camera or meter. These droplets must be wiped from the lens of a single-lens reflex camera and from a great number of surfaces on a view-format camera, its accessories and paraphernalia. Short of a deluge, however, water probably won't leak into the cameras themselves.

A curtain of falling snow acts as a diffusion filter for distant objects: the heavier the snowfall, the shorter the distance at which objects are clear. Try to place a strong subject in the near foreground of a photograph to produce contrast with distant, softly defined objects. This juxtaposition not only gives a scene great depth but also emphasizes the falling snow, which does not usually register at the slow shutter speeds snowfall requires. The quickness of a high shutter speed will define individual flakes, but a slow exposure, which has the advantage of capturing density, will work if a small flash is fired near the camera at the same time. The flash will "freeze" the flakes immediately in front of the camera lens.

Exposures in snow country are not as simple as they appear. Because snow reflects and scatters light, it can distort light-meter readings, leading an unwary photographer to underexpose darker objects. Readings have to be taken quite close to a subject to measure the light correctly. Or, to use a reading taken from a distance, overexpose brightly lit snow by a stop or so and underexpose darker objects by one or two stops. This arrangment produces glistening white snow without bleaching out its contours, yet retains plenty of detail.

Snow reflects not only visible light but also ultraviolet light. Invisible to the human eye, the ultraviolet wavelengths do, however, register on film, producing a bluish cast. This problem increases at higher elevations and may even cause overexposure. A skylight filter is a simple solution to this problem, or you can simply allow the ultraviolet to appear, producing deep blue shadow patterns across the snow.

One last precaution: at the end of the day, seal your photographic equipment in a plastic bag before entering a warm room. The greater moisture in the warm air will condense on the cold surfaces of cameras and film, damaging both equipment and images. Let equipment reach room temperature before removing it from the bag.

All this information applies to working in average winter weather. In temperatures below about 10°, exposed skin may stick to metal camera parts, film becomes brittle and splits, breath will freeze on lenses and filters, and moving parts of cameras will jam unless "winterized" with especially thin oils.

Too often, cameras are tucked away with the summer clothes in a closet, and photographers abandon their art for the winter. But consider the primal beauty of this season. Although special care must be taken, no other time of the year offers such unusual subjects under such unusual conditions. In the transformed world of glittering cold, the possibilities for singular images are endless. □

Chuck Place is a photojournalist specializing in landscapes.

When Things Go Wrong on a Rock, They Go Wrong Fast!

Groundfall

WILLIAM G. HIGGINS

Galen Rowell

ON A BEAUTIFUL, crisp, clear day a couple of Octobers ago, my wife Debby and I drove to Tahquitz Rock to climb. Most Southern California climbers know it, and some of the greatest American climbers began their serious rock work there. It offers the best and most severe alpine climbing south of the Sierra and, as a result, is very popular. Guidebooks and newspaper articles alike ominously intone, "Tahquitz is not for beginners . . . A good place for novices to get into trouble . . . Newcomers to the sport should come here only to sit and watch." This, coupled with the fact that the ninety-odd listed routes on the rock allow climbers of all levels to test themselves at the "jagged edge" of their ability, makes it no surprise that two Stokes litters are placed near the rock to facilitate emergency evacuation to the parking lot, roughly 1500 feet below and a mile away via a steep, crumbly, unmaintained trail. The litters are used all too frequently.

Deb and I were going after a climb we had tried together twice before. The first time we had encountered a Marine Corps training class one pitch (or rope-length) up, so we had rappelled off. The second time, Deb, then new to the game, had taken her first fall. This had occurred several hundred feet up and had scared hell out of her. Rather than quitting outright, however, she then bought specialized, technical rock-climbing boots and a seat harness and trained on low boulders all summer, which is the proper way to learn anyway. I knew she was more than ready for Tahquitz; she wasn't so sure.

We made the long, steep hike to the base of the rock and saw we were in luck—no one was climbing on our route. I placed the belay anchor as Deb smoked her traditional "last" cigarette, and we strapped on our helmets. I was very excited and wanted to climb.

And climb we did. The first pitch went like clockwork. Slam, I was up; bam, and Deb was on the ledge beside me. I climbed away again. I picked the second belay spot carefully because I wanted Deb to be able to watch me climb the third pitch, the most difficult one on this route. The climbing term for the most difficult pitch, or even the toughest move, is "crux." The crux—or key—move on this climb is not difficult but is psychologically demanding. It requires one to leave the security of a deep, relatively low-angle crack and, hanging by one's arms, to swing out across a blank face and do a mantle (a chin-up followed by a push-up) onto a ledge. Not tough, but the view extends straight down hundreds of feet to the treetops, thousands of feet down to the parking lot and miles beyond, where forested valleys flow down to the desert floor. The exposure, and the memory of having fallen from that move the last time, made Deb one nervous lady. I was trying to loosen her up a little by laughing, joking and climbing with the ease that self-confidence can bring. I'd led it before, and there was nothing too tough for me on this route. As I belayed her up the second pitch, I was happy and started looking around the rock at other climbing parties. I noted there were, as usual, a couple of climbers on the ledge a good way up on a route known as the "White Maiden's Walkaway." They were lounging around, obviously waiting for some other party to get up the next pitch and out of their way. The "White Maiden" is a popular route and such delays are common. Eight hours later, I would recall something peculiar about the people on that ledge—they had no rope.

Deb arrived at the belay, and I got ready for the crux lead. I described the crux move to her one last time and went "on belay." Telling her to watch me, up I went. I was loving the climb—my only concern was that Deb might have trouble with her nerve at the crux. I'd decided to belay just above there so I could provide practical advice and moral support, even though a better ledge was only a few feet further up. Just then the fun ended.

Suddenly, terribly, I was hearing sounds I'd never heard before. My arm shot into a crack and twisted tightly as my eyes raked the upper skyline, trying to locate the source of the deep thuds and the accompanying clatter of bits of rock suddenly torn from their resting place. But above me, the air was empty.

The sound was coming from the

"White Maiden." I stared in a horrified trance as a figure appeared, frozen in the air for the briefest moment, its arms outstretched above its head as if in utterly hopeless supplication. Then it continued its relaxed, cart-wheeling descent, with only the thundering crashes attesting to its frightening impacts on the rock. It disappeared into a gully.

"Don't look!" I screamed to my wife, who was, of course, as helplessly transfixed as I was. And the sounds continued. After a time, the figure came into view at the base of the gully and continued down the pile of rubble below. My last view of it is frozen in time. The figure's arm was curled easily over its head, and its posture was one of relaxation, of napping. It drifted down that last boulder field like an autumn leaf down a rippling brook. Then it disappeared under the trees, and only the pebbles continued to clatter down the rock. Suddenly it was very, very still.

I looked down to Debby and had to articulate the obvious: "That was a man," I said quietly, numbly.

I was on a good ledge, wide enough to stand on. My thoughts began to race—I knew I was still 20 feet above my last protection point, and this problem preceded all others. I slotted a chock and tied off to it. It was time to get help.

"Help! You people on Lunch Rock!" I hollered toward the huge boulder at the base, the gathering place for Tahquitz climbers. "Climber down on the White Maiden! Help! Help!" They were already on their way.

"Where is he?" yelled the nearest climber. I directed him to where the fallen climber had disappeared in the trees and tried to decide my own course of action. (Although I would not know it for half a year, the climber to whom I gave directions was a friend of mine, Johnny.) I wanted to get down to help but, being so high on the rock with only one rope, I would have had to do at least three time-consuming rappels—and strand Deb halfway up the cliff. Nevertheless, if a life was at stake and I was really needed . . . .

By calling down, I ascertained that there were enough people for the evacuation and that at least one of them knew how to perform mouth-to-mouth resuscitation and external heart massage. I further established that the victim's partner did not require assistance. It became apparent that I was not critically needed below. And, although this may sound callous, as the stronger member of a climbing team, my duty was unmistakable—to get my party to a position of safety and only then to participate in a rescue.

"Deb," I yelled down, hating what I was going to say, "we can't do anything for that guy. Do you understand?"

"Yes."

"Can you belay me? It's important."

"Yes."

Deb's response *was* important; by it, she indicated that she was prepared to pay attention to nothing but me and the rope running around her waist, and nothing, not a rescue or fear or nausea, would distract her.

I had some emotion-suppressing of my own to do, because I was scared. I was scared as bloody hell. The beautiful view now merely accentuated my height above the ground. The exquisite, gleaming white granite now assumed sinister overtones. I felt naked and vulnerable. I had just witnessed the cost of losing the game in which I was involved. Death, my own death, seemed but one mistake away. With conscious effort, I forced my rational mind to take over; I knew, I was absolutely sure, that the safest, quickest way off that damned rock was straight up. I licked my lips.

"Climbing!" I yelled.

"Climb!" Deb responded.

Conversation was minimal all the way to the summit. I showed Deb how to do the crux move, but she didn't need the instruction. She climbed right past it. I yelled a few more times to those below in the parking lot, to anybody, but mainly it was an attempt to compensate for my own impotence, my inability to further assist in the rescue. And rescue it appeared to be—to my great surprise, a cry had come up from below—"He's still breathing! He's alive!"

We reached the top, unroped and headed down the hiking trail that led back around the rock. By unspoken agreement, we did not talk of it; it was still too soon. We still might be needed.

But when we reached Lunch Rock, it was quiet, with only a couple of climbers there. We exchanged greetings, and they wanted to know what all the commotion was about. I told them, and watched one man's face turned ashen. He started pumping me for a description, and it was apparent before he said it that he had friends on the "White Maiden." That was enough for Debby. Finally, after hours of fighting down panic and fear and horror and overwhelming pity and sadness, it all had to come out. She went behind a rock and threw up, and cried.

How could I comfort her? I knew that the fellow was dead. It wasn't only intuition. I had seen the fall; half its length would have been enough. Whether he breathed a minute or a day more, the end result would be the same. I knew it, and Deb knew it.

As we hiked down the trail, we frequently saw blood on the rocks. As Johnny told me later, they had had to tip the Stokes litter on its side to let blood drain from the boy's mouth to keep him breathing. Internal injuries had done that. His skull had been caved in, his scalp peeled back. From the time Johnny reached him, he said he knew there wasn't a chance. Mercifully, the lad had

Climbing Terminology

Anchor: anything the climber is attached to by rope to keep from being pulled off the mountain.

Belay: to feed the rope to the leader from a secure position, keeping a firm hold on the rope in case the leader falls.

Carabiner: an oval metal ring with a spring-loaded gate on one side that can secure a rope while allowing it to slide freely.

Chock: a metal or plastic wedge that is fitted into cracks or between rocks as a protection point. Preferable to a piton because it can easily be removed later and doesn't deface or wear away the rock.

Jamming: climbing by jamming fingers, fist, an arm or leg into a crack in the rock. A jam crack is a crack suitable for this technique.

Pitch: a unit of measure of a climb; the distance covered by a leader in one rope length. A pitch can be as long as the rope or, if the going is difficult, as short as 30 feet.

Piton: a metal blade or wedge hammered into a natural crack in a rock, having a hole at one end to which a carabiner can be clipped; used as a protection point.

Protection point: a chock or piton placed by a leader, to which a rope is attached. The protection point provides some degree of security in case of a fall.

Rappel: descent of a steep slope along a rope; friction of the rope across the climber's body or through carabiners is used to control the speed of the descent.

Seat harness: made of nylon webbing; it holds a climber securely and eliminates waist strain.

never regained consciousness; there had not been a long period of pain.

"I don't know how he lasted as long as he did," Johnny told me, adding, "He was real young and wasn't wearing any equipment."

No equipment! Debby and I had talked about that in the car on the long drive home. How could he have fallen? What went wrong? Then it came home to me—he had had no rope. He wasn't a climber at all. I had a good, long look at him as he plunged into the trees. I couldn't tell you the color of his clothes or his build, but I saw that he had no rope, no harness, no equipment and only mountaineering boots—not climbing boots. He was certainly not a climber who knew his own abilities and the inherent risks of going unroped—he was just an adventurous boy.

A newspaper account later called him a "hiker" who had "lost his footing." He died at seventeen years of age.

A week later we went out to Joshua Tree National Monument with about six vanloads of people. There is a campground in the middle of the most popular climbing area, so with no approach hike, shorter climbs, and the cooler of beer handy, the prevailing rock-climbing attitude is far less serious than at Tahquitz. That is not to say there is no serious climbing at Joshua Tree, not by a long shot. But a therapeutic weekend of fun was just what Deb and I needed. After the experience of the week before, we did not want an all-day climb on a big wall followed by a three-hour drive home. We looked forward to some short, challenging climbs, a lot of good food and cold beer, a campfire with friends and a beautiful snooze under the star-studded desert sky.

Saturday morning was as fun as it could be. Just to get the weekend going, Deb and I did a couple of short climbs that were exciting and satisfying. By noon, we were relaxing in our lawn chairs, eating lunch, bragging, and getting to know the friends of friends who were camping with us. One such stranger was Bill, an energetic guy who enjoyed mountaineering. He'd spent some time tied into a rope, but this was his first "real" rock-climbing weekend. He wanted to climb very much. So did Keith, a good friend and climbing partner of mine. I did, too. As we finished our lunch, we flipped through the guidebook and selected a nearby moderate climb. As we racked up the hardware, we as-

sured everyone we were merely going to "take a look at it," but that fooled nobody. About ten people grabbed their cameras, beers and sandwiches, and, hooting and laughing, off we went.

We arrived at the base of the climb and Keith, Bill and I surveyed it. It was a straightforward jam crack that started 25 feet or so off the ground. The crux move was the entry into the crack, a high step over a small overhang. The step has to be made from a spreadeagle position, and the climber has to commit himself without adequate handholds; once started, you couldn't go back.

"Looks strenuous."

"Looks hard."

"Who wants to lead it?"

Keith and I looked at each other the way two men with no money might look at each other in a restaurant when the check comes. Neither of us said anything.

"I'll lead it," offered Bill, to everyone's surprise. In the conversations that morning, he'd shown ample theoretical knowledge of climbing and safety techniques, and he had some, though not much, experience. Everybody looked at me for the final choice of leader—I was the most experienced climber in the party. Besides, it was my rope.

"What the hell," I thought, "if he can set a chock, why not? Also, then I won't have to lead it myself."

"Okay," I said, and handed him the sharp end of the rope. That was a mistake.

Bill is still alive because letting an inexperienced climber take the lead was the only mistake I made that day. He may limp for the rest of his life because of that mistake.

Among this fun-loving group (most of whom were not climbers), the mood was just plain rowdy. Deb and I had talked about our Tahquitz experience probably more than we should have, so much so that our friends asked us to find a lighter topic. And now, with the laughter and cheery atmosphere, Tahquitz seemed very far away.

But as I placed my belay anchor, I remembered. There are times when a ground belay anchor is superfluous, but I wanted one that day, however unnecessary it may have appeared.

I slotted a loop of nylon webbing through a crack just below where two boulders rested against each other, folded the webbing through itself, and jerked it tight. I checked for sharp edges that might rip through taut nylon. I tried to rock the boulders. Nothing happened—I

had established a good anchor, and I clipped my harness into it. I positioned myself against one of the boulders in such a way that, if a fall occurred, I would not be jerked off the ground. As a matter of fact, I wouldn't even budge—the better to attend to the business of stopping the falling leader. As Bill secured his store of chocks and finished tying into the rope, I added one finishing touch—I clipped his end of the rope into two carabiners attached to my harness, one on either side of my body. This simple procedure would effectively keep the rope around my body where it should be and would prevent it from being jerked over my head if the rope were suddenly yanked upwards. I was as ready as I was going to be and told Bill he was "on belay."

Deb, although she elected not to climb this one, was probably the most observant person out there that day. From the moment Bill stepped on the rock, I heard her voice cut through the general clamor with suggestions. She, too, was beginning to feel the presence of a specter from Tahquitz. Bill had just started up the rock when a dog belonging to one of the people came sniffing around me.

"Get the dog away," she said, "he's got to pay attention to the climber and can't spend time messing with your dog."

The owner, who was preparing his camera to record the climb, dismissed her with, "It's cool; he's a good dog."

She promptly tore into him with a short, unprintable barrage that stopped all other conversation and resulted in him removing his dog from my immediate vicinity. He was sore but Deb didn't care—she just wasn't going to let me be bothered while belaying a climber off the ground floor. By then, Bill had left the ground and was climbing quite well. However, he was neglecting to put in any protection and therefore might as well have been climbing unroped.

"Put in a chock, Bill," she hollered up. He had just been climbing past the last decent, protectable spot below the crux. By shouting, Deb probably saved his life. Her tone of voice made it clear that this, like the dog issue, was non-negotiable, and he obediently halted, placed a chock and clipped the rope into it. Now, he was really "on belay."

He climbed eight feet higher and got in trouble. It was not apparent at first. Then Deb, Keith and I knew it; then everybody knew it. Bill had reached the spreadeagle position and could not negotiate the overhang. Or, rather, being that high above his minimal protection—the chock anchoring him to the rock—he was afraid to try. I couldn't blame him. He tried various moves and holds as minutes passed, and the group grew quiet and watchful. The non-climbers were realizing that he was not climbing as planned: Deb, Keith and I were silently comparing the distances between Bill and his single piece of protection, and between his protection and the ground. If the former distance was greater than the latter, the protection was utterly useless—if he fell, he would hit the ground.

Bill started to get concerned. He looked over his shoulder to see if he could retreat. He couldn't. His leg started to vibrate, not from fear, but from the muscles flexing continuously until they became fatigued. "Sewing-machine leg" is nature's way of telling you that you've got about 30 seconds to shift your weight and unload that muscle, or it will shake you right off the wall. It was obvious—he was going to fall and I, as the belayer, absolutely had to catch him. I strained forward in my harness so there would be no unnecessary slack in the system and stared at the bright gold rope connecting Bill to me. I kept it loose so I would not pull him off, but permitted only inches of slack; inches were crucial. Perhaps there was one other alternative, since nothing

else we had tried had been working.

"Can you get a big chock above you into the main crack?" I shouted. A point of protection there would not only bail him out of his current plight but would also protect him when he attempted the crux. He nudged closer to the crack, standing on a tiny ledge so far up under the overhang that his body was dangerously off balance. I paid out a few more precious inches of rope and then, gripping it with both hands, braced it across my thigh. He let go with his right hand and began readying a chock. It hung up on his helmet in back; he tugged once, his left hand slipped loose, and he was airborne.

When things go wrong on a rock, they go wrong so quickly that if you're not completely ready *in advance*, you lose your climber. In the time it takes to clap your hands, Bill was down. He had turned face out and fallen away from the rock. He landed once on the near-vertical face with his feet, flipped upside-down and pitched headfirst toward the ground, which was solid rock. I didn't have time to blink; I didn't have time to take a breath. It was good that I was already in full braking position.

Bill, of course, took a worse jolt than I did. When the rope caught him, he was falling headfirst through the air, arms instinctively over his head. He had fallen at least 20 feet with only a single glancing impact to slow his body. At the sudden halt, one of his knees slapped against the rock apron. Bill was scraping his elbows on the ground when the rope stopped him; suspended just above the ground, he was mere inches inside his margin of safety, and because of it he did not die.

So, he survived. He went back to camp, and Keith and I climbed the route successfully (Keith led). I don't know which weighed heavier on my mind—that I had almost killed a climber (by permitting him to lead), or that I had just saved his life. That incident, coupled with Tahquitz, totally unnerved me. I took two bottles of beer and walked out into the Joshua Tree desert and broke right down in sobs. I cried hard, and that's what this "sport" can do to a person.

The following day, having safely discharged my backlog of pent-up emotions, I led another climb, but that's another story and I've already told two. □

William G. Higgins has climbed extensively in the Sierra Nevada and is a leader in the Sierra Peaks Section of the Club's Angeles Chapter.

Galen Rowell

On the northwest face of Yosemite's Half Dome

Climbers and the Mountains They Climb

The Boldest Dream: The Story of Twelve Who Climbed Mount Everest, by Rick Ridgeway; Harcourt Brace Jovanovich, New York, 1979. Cloth, $10.95.
Everest: Expedition to the Ultimate, by Reinhold Messner; Oxford University Press, New York, 1979. Cloth, $16.95.

DENNIS DRABELLE

RECENTLY "Wide World of Sports" featured George Willig, the gazelle of the World Trade Center, in preparation for an assault on a Wyoming monolith, the Devil's Tower. As Willig explained his chosen route, ABC's technicians superimposed on the face of the tower a magic yellow vector that wriggled up the rock like a strand of electrified fettucini. There, I said to myself, that's what's gone wrong with technical climbing. It's become diagrammatic. As drained of romance as a paper touchdown in the Steelers' playbook. As detached from the landscape as a field map in a monograph on the Battle of Chancellorsville. I didn't bother to watch Willig's climb.

Not long afterwards, Rick Ridgeway's book arrived in the mail. The timing was not auspicious. Yet I was quickly disarmed. *The Boldest Dream* is thoughtful, candid and excitingly told; the 1976 American Everest expedition was well-planned and reasonably unbloated and spontaneous. If it still smacked a little too much of media eventfulness and conspicuous-consumption adventure, these flaws can be attributed to the expense and arduousness of climbing Mt. Everest.

The adventure had a serendipitous start. Toward the end of 1975, Phil Trimble, a State Department lawyer in Washington, wrote an old classmate, now a foreign-service officer in Kathmandu, inquiring about the next year's climbing permits in Nepal. The reply was that all the major peaks were spoken for but one —Everest. The Nepalese government had awarded the single post-monsoon permit for the mountain to a group of French climbers, but inadequate financing had

forced them to relinquish it.

Trimble was stunned, then hooked. Though he and his climbing compeers were only moderately seasoned, Everest wouldn't come their way twice. Time was short—the period between the end of the monsoons and the onset of winter began in only nine months—but Trimble thought he could mount the expedition if he kept it small. He assembled a team of twelve climbers: besides himself there were another lawyer, two doctors, two chemists, an anthropologist, a real-estate salesman, a writer (Ridgeway), a dance teacher, a glider pilot and a Skylab photo analyst. Two of the twelve were women. The mere act of signing up for the trip put them all statistically in danger: "The majority of expeditions that attempt Everest lose at least one climber."

Because the twelve were so pressed for time, the State Department helped with logistics. Diplomatic form required that every telegram from Washington to an American outpost be sent in the name of the Secretary of State. This quaint practice resulted in cables with such improbable conclusions as: "What is the price of peanut butter in Kathmandu? (signed) Kissinger."

Shaped by the organizing skills that a good lawyer can summon, the expedition was coming along. But there was one pervasive problem—lack of funds. Then a lucky stroke unblocked the cash flow. An unnamed commercial designer advising the group about letterhead stationery suggested that the word "Bicentennial" be worked in somehow. The suggestion was adopted; the group became The 1976 American Bicentennial Everest Expedition. A few weeks later CBS Sports agreed to foot a large portion of the expedition's bill (the ultimate total was $250,000) in return for being allowed to film it. A CBS official explained the decision to Ridgeway: "We thought that if people were so enthused about celebrating the Bicentennial with a fleet of tall ships, perhaps they would respond to a group of Americans celebrating the country's two-hundredth by climbing the world's highest mountain." (The CBS crew's occasional insistence that the climbers act out unnecessary maneuvers for the camera and their alleged indifference to an injury suffered by Trimble were to irritate most of the twelve. The expedition would have been both better and impossible without CBS along.)

Once under way, the expedition suffers from its share of divisiveness. Ridgeway's reporting on the disharmony is infused with a singular combination of candor and restraint, so that we understand the climbers and their limitations without feeling superior to them. The lone foreigner in the group, a Dutch chemist, expresses resentment at the Americans' dominance and clannishness. (Since the Sherpas start saying "far out" and "bitchin' " a few days into the trip, the Dutchman may have a point.) One of the women protests being excluded from the teams leading the way through the treacherous Khumbu Icefall; Ridgeway is sympathetic but notes her tendency to be hypercritical of others. Some of the twelve are condescending to the Sherpas, an attitude that may have limited to two the number of climbers to reach the pinnacle. One climber behaves egotistically through much of the trip, then has a change of heart (Ridgeway produces some of the man's journal entries as first-hand evidence). Though he had wanted above everything to be one of those to reach the top, he cries with joy at the news that the chosen two have come back alive.

Ridgeway attributes the expeditionary rancor to a number of causes, including the chronic lack of oxygen at high altitudes. But one of his other explanations—his best stab at replying to the inevitable and unanswerable question, Why climb Mount Everest?—may point the way to the real cause. It's the need for life-risking adventure, says Ridgeway, that motivates people like himself to climb. ". . . There was a time when 'real adventure' was open to many. A young man had only to walk the docks of New Bedford and sign on to the fo'c'sle of a full-rigged ship bound for the southern whaling grounds. Or pack up his new wife in a Conestoga and cross the continent to the land of milk and honey. . . . Unknowns, dangers and risks, with the stakes being your own life. Today those things are hard to come by in the normal pursuit of life. For one thing, technology has so minimized the dangers an individual must face in dealing directly with nature that it's hard to find a job or an occupation that offers real adventure. More and more people today feel obliged to invent situations that create those dangers. That's the reason, I think, for the growing participation in hang-gliding, small-boat blue-water sailing, mountain climbing, whitewater kayaking, big-wave surfing, deep-water diving, and a host of other risk-taking sports." If Ridgeway is right—and for the most part I believe he is—then an Everest expedition is by nature a collision of adventure-lusting desperadoes itching to lay their lives on the line. Only the development of a strong web of friendship could have kept the twelve from getting in each other's risks. And such a web did not develop.

The gripping details of the final ascent—the winnowing of what were to have been two five-person teams down to one team of two, the pair's arrival on the summit so late in the day that they might have to bivouac there, their disappearance for several suspenseful hours and their jubilant return—should be left for those interested to read Ridgeway themselves. But two photographs that

punctuate the account ought to be mentioned. One, on the dust jacket, shows Chris Chandler, handsome, smiling with perfect teeth, his long, blond hair coiling lazily about his head. The other, in the middle of the book, shows the same fellow on the summit, swaddled in wool and down, caked with frost, and hooked up to oxygen. Hidden behind goggles that glint in the sun, he looks like a dingy insect. You are not really yourself on top of Everest.

Ridgeway's writing is fine—no tricks, no reaching for effects, just solid, thorough reporting and intelligent analysis. One has the impression that, though he may have missed a minor incident or two, overall he has given an uncommonly accurate version of the outer events and inner feel of the expedition. And, unlike many climber-writers, Ridgeway is as entranced by his surroundings as he is by the challenge of the ascent. The Sherpas take to him because he is keenly interested in their life and religion, and he is never too busy studying the route ahead to pause and delight in the beauty falling away on all sides of him. One of the Sherpas speaks for Ridgeway when he says of a magnificent panorama, "Much country here."

A couple of years after Ridgeway and company, a group of Austrian men climbed Everest. Reinhold Messner's *Everest: Expedition to the Ultimate* is the frustrating result. Though the dust jacket tells us he has won writing prizes, Messner does not know how to make a book. After a two-page introduction, *Everest* wanders from its subject to a 25-page excerpt from a 1925 work on the first Everest attempt. Besides its bad form, the book suffers from poor translation (Messner is heard referring to a fellow-climber as a real "goer," which is translatese for "mover" or "strong climber") and lax editing (Messner and his translator are allowed to foist off "liaise" as a horrid new verb mutant of "liaison").

Everest also falls prey to that well-known occupational hazard of mountaineer-writers, montane mysticism. Messner whips up his slant on Everest, an ascent without resorting to oxygen, into a cosmic question: "Is the world so constructed that Man can climb to its highest point without mechanical aids?" Perhaps. Yet most of Messner's equipment was machine-made, and so his question seems conveniently narrow. But the choicest example of Messner's overwriting is his answer to the question, Why climb? "I don't think I would really want to know the reason," he protests, "but I often indulge the theory that perhaps it has something to do after all with the fact that we men cannot bear children." Even to mention this theory is to indulge it.

Lest I seem to be picking on Messner, let me quote at some length from his rationale for doing Everest without an oxygen mask. ". . . In the first 200 years of alpinism, it was the mountain that was the important thing . . . But for some years now and particularly on my own tours, it is no longer the mountain that is important, but the man, the man with his weaknesses and strengths, the man and how he copes with the critical situations met on high mountains, with solitude, with altitude.

"My expeditions have thus enabled me to draw closer to myself, to see into myself more clearly. The higher I climb, the deeper I seem to see within myself. But were I to put all sorts of technical gadgets between myself and the mountain, then there would be certain experiences that I could not feel. If I were to wear an oxygen mask, I should be unable to know exactly what it means to climb at heights of 8000 metres or more, what it feels [*sic*] to struggle against the body's resistance and to endure the loneliness of being totally beyond the reach of help."

Despite its flaws, Messner's book has value. It is illustrated with fun maps and glorious photographs. In fact, judging from the photos, I would guess that the most compelling motive for climbing Everest has become simply the enjoyment of its beauty. One picture stands out from the others. A cloud formation swirling above a lesser summit has the blue ridges and white whorls of the earth seen from a satellite; it looks as though a stupendous mirror were passing over the planet.

And when he drops his metaphysical self-promotion, Messner can be informative and entertaining. He finds good, concrete words to attach to the overwhelming feeling of standing on the summit at last. "In my state of spiritual abstraction, I no longer belong to myself and to my eyesight. I am nothing more than a single, narrow, gasping lung, floating over the mists and the summits." And he can be honest enough to admit that in a way he would rather not actually complete the climb. ". . . In the back of my mind clings the desire that this expedition should have no end, that this ambition of mine could stay with me forever in my dreams, wherever I go. Everest-without-oxygen as the eternal Utopian ideal. I have the presentiment that through success, something will be lost forever—and that not just a mere personal fantasy." Unfortunately, though, Messner keeps remembering that he is supposed to be profound.

Such a thought never seems to cross Ridgeway's common-sense mind. He apparently found climbing Everest so significant and lucky an experience that he felt duty-bound to report it accurately to those of us who will never duplicate it. Messner found Mount Everest to be only an 8848-meter extension of himself. □

Dennis Drabelle is an attorney and free-lance writer in Washington, D.C.

Great Ascents, by Eric Newby; Viking Press, New York, 1977. Cloth, $12.95.

GORDON WILTSIE

AS A SOURCE for tales of human folly, wild places and high adventure, mountaineering is unsurpassed. The combination of spectacular mountain settings, strange foreign lands and frequently absurd exploits has entertained readers for centuries. Climbers themselves are often eccentric, and the situations in which they voluntarily place themselves can be funny, frightening, euphoric and even bizarre.

Eric Newby, a well-known British writer, recognized this long ago, during an expedition with a friend to Mir Samir, a peak in the Hindu Kush, a climb they undertook almost totally untrained. They failed to reach the summit, but Newby gained an appreciation of the "looneyness" that drives normally sane men and women upward, into ever more dangerous places. His appreciation grew into fascination, and he ultimately was compelled to write a history of climbers, which he titled *Great Ascents*.

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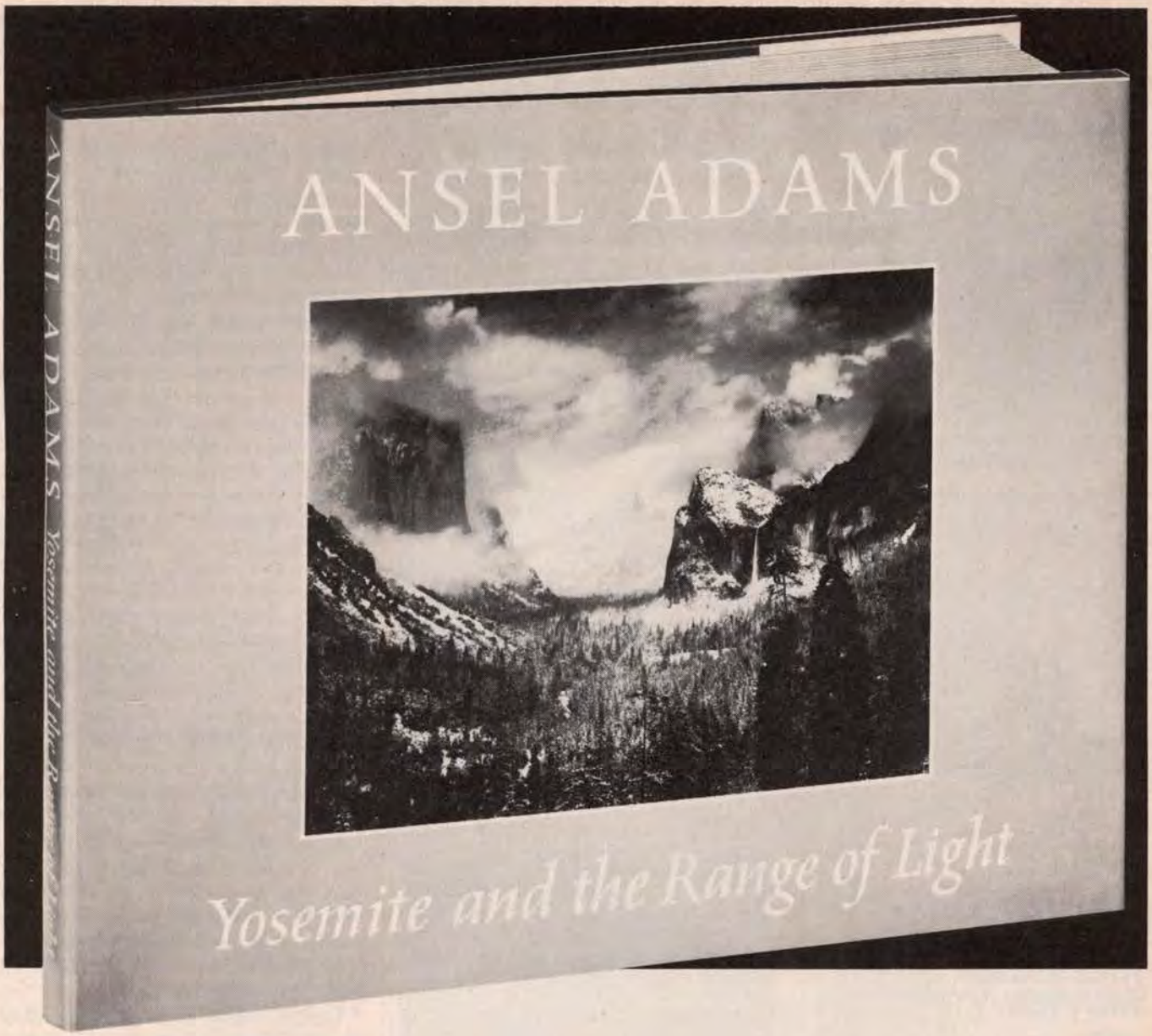

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years of mountaineering milestones, with sections on the Alps, North and South America, Turkey, New Zealand and the Himalaya. *Great Ascents* is a smooth collection of classical quotations, tales of "conquest" and defeat and entertaining descriptions of the human circus involved—sourdoughs from Fairbanks, Zermatt mountain guides, stuffy matrons on a holiday or monomaniacal big-wall climbers of the new era. Each chapter captures some phase of climbing development, and the entire book is well illustrated with striking photographs and old etchings. In a very few pages, *Great Ascents* highlights mountaineering's rugged history.

This was no easy task, Climbing is too big a subject to be easily condensed into a single volume. Literally billions of words have been written about it, and Newby's greatest difficulty was deciding what to leave out. During the introduction he describes himself as ". . . in the same dilemma as a man in a saloon who wonders whether he will live long enough to have a shot from all the bottles." Between the extremes of writing the entire story of just one climb and listing merely the vital statistics of every climb, Newby wisely compromised—sipping a few drops, so to speak, from each of the vintage labels.

Though clearly knowledgeable about mountaineering, Newby is not an active climber himself, and his descriptions occasionally leave him on technically shaky footholds. While discussing Yosemite, for example, he confuses its world-famous granite cliffs for limestone and mistakenly labels the revolutionary climbing techniques developed in the valley with the names of old styles they replaced. However, Newby makes little pretense of technical knowledge, and his occasional lapses are forgivable in the context of what he tried to accomplish with *Great Ascents*.

It is Newby's very distance from his subject that allows him to breathe humanity, subtle wit and often clever prose into the work. Ultimately this is a book about people, and Newby depicts them well, with a perspective certain to appeal to an audience wider than just climbers.

With the exception of the chapter on climbing Mount Ararat in Turkey, which should have been replaced by a more

historically relevant discussion of rock-climbing in the author's native Britain, Newby has chosen his "botttles" with a keen eye. From Mont Blanc to the Annapurna South Face, his selection of mountains and climbers is well-suited to describing the ever-increasing heights of ambition that have characterized mountaineering since the first goatherds and chamoix hunters began grappling up summits in the Alps.

In relatively few pages, *Great Ascents* illuminates a complex, technical and frequently absurd realm of human endeavor. It is to Newby's credit that the finished product is both concise and in-depth, yet still entertaining for almost any armchair mountaineer. Even grizzled old-timers stand to learn a few new tales for the next bivouac ledge. □

Gordon Wiltsie is a writer, documentary photographer and mountain guide.

Mountain Passages, by Jeremy Bernstein; University of Nebraska Press, Lincoln, 1978. Cloth, $12.50.

FRANCES GENDLIN

TEN YEARS AGO I took my first hike in the mountains. It was the fourth of July, and I, a city-slicker, had just the day before arrived for a holiday in Aspen, Colorado, elevation 7900, from Chicago, elevation a-lot-further-down. In downtown Aspen, a friend picked out some boots for me and said we would go for a nice walk the next day with a physicist who knew the mountains, Jeremy Bernstein, and one of his friends. Unused to the altitude and wearing my stiff new boots, I didn't think that 3000-foot climb up (and then down) the Cathedral Lake Trail a "nice" walk at all. And I decided that Jeremy Bernstein only posed as a physicist from the Stevens Institute; he was, in fact, a damned gazelle.

Now, in 1979, I encounter Jeremy Bernstein once again, with a great deal less anger and pain—with some enthusiasm, in fact. The author of many articles and books on mountain climbing—and yes, also on physics—Bernstein has combined nine of his previously published mountain stories into a fine, easy-reading book. Seven of the stories were first seen in the *New Yorker*, and they hold to that magazine's best style of

chatty, pleasant writing. For these articles are, in essence, vignettes: a nice combination of personalities, history, gossip and feelings, in addition to convincing descriptions of the challenges, dangers, intricacies and the camaraderie of climbing. Bernstein is not a climber in the American style, according to which, after some lessons, people just plow ahead on their own. Instead, in France's Chamonix Valley, where the bulk of these stories take place, he hires an alpine guide, Claude Jacoux, who takes him up, encourages him, shows him the life of a climber, and becomes his friend. These light stories are about Jacoux and others like him—the guides, the heroes, the experts—men devoted to climbing. They show just who these men really are, these people who decide to spend their lives risking them.

Bernstein throughout, with wry, self-effacing humor, compares himself to these men, belittling his own devotion and ability:

> "I was first introduced to the high mountains, entirely by chance, in 1937, when I was eight—I have an ancient photograph that shows me clinging to a small rock and looking very worried. (I have a number of more recent photographs showing me clinging to large rocks with about the same expression.)"

And:

> "While I am thinking what to do next, I have the sudden conviction that of all the fifty thousand members in good standing of the French Alpine Club I am the most chicken."

The juxtaposition of his own amateur ability and that of the expert, professional climbers is not always humorous; the descriptions of the realities of climbing and of his own feelings are sometimes gripping:

> "The first step of the rappel is the hardest for me. One must give up the security of a comfortable ledge and go over the edge straight down, facing in toward the rock. I take a step or two down the wall with the rope sliding around my back. I look down and my heart sinks. Below there is nothing. . . . Knowing that there is no choice and that I must keep my nerves under control, I take a deep breath and swing backwards on the rope. For an instant I dangle in midair but then the rope swings me back against the face below, and after what seems like a lifetime I can feel my feet back on the rock and can walk down the rest of the face. I feel an enormous sense of relief and elation."

But these stories are not really about Bernstein, although we come to know him well. They are more about his own knowing of Jacoux, Yvon Chouinard and Gary Hemmings, about the Dru and the Eiger mountains, about death, rescue and ultimately about life itself.

One chapter, "Chouinard Ascending," makes a nice companion to Chouinard's own *Climbing Ice*, published in 1978 by Sierra Club Books. In addition to being a minibiography, this piece also rambles pleasantly through discussions of climbing equipment and its manufacture, and ends with Chouinard and Doug Robinson climbing ice at 10,000 feet, in 60-mile-an-hour wind. No fool he, Bernstein knew his limits and just watched.

The last two stories in the volume, originally published in the unfortunately now-defunct *Mountain Gazette*, don't quite seem to fit the mood the earlier pieces establish. They concern a trip to Pakistan, and, as is so often the case of stories about travels in Asia, they occasionally bog down in descriptions of the bureaucratics, the logistical mysteries of visas and passports, of misbehaving automobiles and inedible food. Bernstein does relieve these accounts with a fascinating history of the region and of the progress of climbing in the area; it is only to be wished that he, like other writers, didn't find the difficulties of living and traveling in the Third World to be so very quaint. Or that he didn't express his rather prissy disdain of the "hippies" who at the time frequented the region. But these faults don't really detract from the later essays. Since he didn't get to do much climbing in Pakistan, this final section is accurately a compendium of travel lore, and as such it reads easily and is well worth the time.

Because these pieces were previously published as separate articles, there is some repetition and overlapping of information that might have been avoided with some judicious editing. Despite this, the stories are informative, charming and give clear insights into climbing and the lives of climbers. □

The Storefront Environmentalists Of Northcoast California

ROBERT A. IRWIN

Consider the odds: In Northern California a small, 350-member group works in a vast, 17,530-square-mile region with a welter of major environmental problems. How can a handful of activists possibly make much of a difference? With help from kindred spirits, a few members of the California Redwood Chapter's North Group have been able to make quite a difference indeed.

During the period of general environmental euphoria following Earth Day in 1970, a number of North Group members, including Dave Van de Mark, Chuck Kennedy, Lucille Vinyard and Bill Devall, met with activists from other conservation groups. Together they represented perhaps 1200 people, whom they sought to unite and give common direction. Those 1200 were scattered throughout five counties of northwestern California—an area larger than the states of Massachusetts and New Jersey combined, but with a population of only 200,000. The northern coast is a mountainous area of Douglas fir and redwood forest wilderness, untamed rivers and a spectacular 360-mile coastline.

It was natural that the organizing conservationists held their gatherings in Eureka, in the Humboldt Bay area. That's where most of them lived, and it's only 50 miles from Redwood National Park headquarters. Eureka, the largest port between San Francisco and Portland, Oregon, is the region's "metropolis." Nearby Arcata is the home of Humboldt State University, whose programs in natural resources, wildlife management and ecology attract environmentally conscious people from all parts of the nation. Students (many of them hikers from the university's Boot and Blister Club) plus a sprinkling of faculty members—Sierran Bill Devall among them—formed the nucleus of those gatherings. And well over half of the participants came from the immediate community and from outlying parts of the region. The organizers decided they needed a clearinghouse for environmental information, a communications center, and a way to coordinate their efforts so that people continued to do the things they could do best, and in their own ways. With these goals determined, in the spring of 1971 the Northcoast Environmental Center (NEC) was born.

Today, eight and a half years later, the NEC is thriving. At its brightly painted storefront headquarters in Arcata, volunteers exude the old Earth Day enthusiasm. The center both serves and involves the community, according to Sierran Tim McKay, the NEC's coordinator and only full-time paid staffer; passersby drop in to use the extensive environmental library or to pick up leaflets on nuclear power, herbicide spraying, protection of the region's free-flowing rivers and any number of other current environmental issues. Some of the drop-ins become regulars, then find themselves working as volunteers.

From time to time, the NEC conducts public information meetings on such issues as nuclear power or coastline planning, with scientists and representatives of business, labor and taxpayer groups participating. Its workshops have explored such topics as coyote controls, the proposed Butler Valley Dam and the Redwood National Park master plan. The center also provides speakers for community groups from its staff and its roster of volunteer professionals, as well as from its nine member organizations: the Sierra Club's North Group, Friends of Del Norte (County), Friends of the River, the Group for Organic Alternatives to Toxic Sprays (GOATS), the Six Rivers Branch of Friends of the Earth, the Redwood Region of the Audubon Society and, most recently, the Arcata Community Recycling Center.

Since October 1976, when substantial funding through CETA (the Federal Comprehensive Employment and Training Act) was cut off, the Northcoast Environmental Center has had to stand almost entirely on its own financial two feet. It appealed immediately to its members and friends for support, and they came through beautifully in 1977. An annual fund drive was launched in 1978 with a target of $25,000. It raised a total of $16,025—a figure significantly greater than the 1976 CETA funding. This year the goal is again $25,000, and at press time contributions were coming in at about last year's pace.

The Northcoast Environmental Center taps several additional sources of income. It continues to receive a grant from the Associated Student Body at Humboldt State that pays for some students' work at the center. The nine organization members of NEC pay $150 each in annual dues, and each is committed to putting on at least one fund-raising event a year to benefit the center. In return, each organization appoints one of the members of the NEC's board of directors, which decides the umbrella group's policies. Sales of save-the-whale pins and of various ecology buttons, posters, bumper-stickers and T-shirts net additional cash.

Some of the center's special projects are self-sufficient; few drain NEC operational funds significantly. The oldest and most successful project is the Arcata Community Recycling Center, which operates three days a week in a downtown location and also schedules a mobile unit into outlying communities. In addition, the center picks up and recycles paper, cardboard and IBM cards from local businesses. Early in the summer, the recycling group spun off from the NEC and became the ninth member organization. In its first independent project, it offered to raise funds for local churches, schools and community organizations by purchasing their aluminum cans. The aluminum and other materials collected are sold to reprocessors; the proceeds usually more than cover the cost of collection.

The payoff of many of the center's projects is not in cash, but in benefits to the environment and human health. For example, the NEC's Manual Conifer Release Project, set up by GOATS two years ago, demonstrates the feasibility of an alternative to spraying toxic herbicides that kill broadleaf trees and shrubs in order to promote the growth of

conifer timber trees. The method is to go into a replanted forest area two to seven years after seeding and remove the hardwood and brush from around the conifers with chainsaw and brush hook. Last summer a crew from GOATS took Forest Service managers on a tour of five project areas where the hardwood and shrubs had been thus manually removed three growing seasons earlier. Few signs were spotted of the hardwoods resprouting or competing with conifers. The cut brush also appeared to have decayed rapidly, producing less of a fire hazard than when herbicides are used. The GOATS crew pointed out that other jobs (such as controlling erosion, repairing culverts, planting trees and building fire lines) could be done at the same time, providing a complete forest-management service.

The Northcoast Center's latest project is a thorough cleanup of one county's 110-mile shoreline and a scientific survey of beached (dead or dying) birds, in conjunction with the Point Reyes Bird Observatory. Simultaneously, a public-awareness campaign is being carried out on the coastal litter and garbage problem. After obtaining CETA funds through the county and authorization for three full-time positions, Humboldt County Beach Restoration and Beautification Project began. In its first foray onto ten miles of beach early last summer, the three-person crew lugged away—on foot—2300 pounds of litter (less than a third of it, however, recyclable). Among the "loot" from the nine-day effort: 300 plastic jugs, 200 plastic six-pack carriers (which can entangle birds), a plastic turkey, 60 dead birds and, perhaps a token of some person's regard for natural beauty, a green porcelain toilet bowl. On later cleanups, crew members were helped by center volunteers, students and county-released honor prisoners.

The Northcoast Environmental Center has gradually won the respect and cooperation of the community. Loggers, commercial fishermen, mill workers and the rest of the people of the Northcoast are beginning to realize that all the environmentalists' talk—about sensible forestry practices, bans on herbicide spraying, cleaning up the rivers, keeping oil-well drilling out of the ocean, energy conservation and a lot more—that all of that talk does make sense after all. Furth-

Statement required by the Act of Congress of August 24, 1912, amended by the Acts of March 3, 1933, July 2, 1946, June 11, 1960 (74 STAT .208), and October 23, 1962, showing the OWNERSHIP, MANAGEMENT AND CIRCULATION of *Sierra, The Sierra Club Bulletin,* published six times yearly at San Francisco, California—for November/December, 1979.

1. The names and addresses of the publisher, editor, and executive director are: Publisher: Sierra Club, 530 Bush St., San Francisco, California; Editor: Frances Gendlin; Executive Director: Michael McCloskey.

2. The owner is the Sierra Club, an incorporated non-profit membership organization, not issuing stock; Theodore Snyder, Jr., President, Route 1, Box 261, Walhalla, South Carolina 29691; Denny Shaffer, Treasurer, 2910 Skye Drive, Fayetteville, North Carolina 28303.

3. The known bondholders, mortgagees, and other security holders owning or holding one percent or more of total amounts of bonds, mortgages or other securities are: NONE.

The average number of copies of each issue of the publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was 158,266.

(signed) Frances Gendlin

ermore, they know now that the people at the center are hardly elitists who are afraid of hard labor, and that some of the environmentalists also have worked in the mills and the forests. And the guys over at the Louisiana-Pacific mill know that members of the NEC Men's Slo-Pitch Softball "C" League team, the Snail Darters, can swing a mean bat—it was none other than "Big Tim" McKay who pitched a humiliating 17-0 shutout against them last July. The Snail Darters went on to close the season as league champs.

If you want to help the Northcoast Environmental Center continue its work (and at the same time enjoy *Econews*, one of the most readable and informative environmental publications around, become a Friend of the Center. Just donate ten dollars—or more if you can—to the Northcoast Environmental Center, 1091 H Street, Arcata, California 95521.

Wilderness Use Study

How do Sierra Club outings affect wilderness? It's an important question—and one addressed by *A Report on the Wilderness Impact Study*, a new Club publication prepared for the Outing Committee. The publication treats such topics as trail revegetation, the impact of pack animals on meadows, firewood use and availability, human waste disposal and a section entitled "Studies on the Role of Warm-blooded Vertebrates in Helping to Reduce Amounts of Organic Garbage around Backcountry Campsites." The publication recommends ways the Club can further reduce the impact of its own outings in the Sierra. The report is available for $12.95 plus $.95 for handling and shipping (California residents, add $.85 sales tax) from the Sierra Club Book Store, 530 Bush St., San Francisco, CA 94108.

Notes and Briefs

The Great Lakes Chapter, my Sierra Club home for ten years, has cited me for neglect. In my July/August listing of some of the chapters especially active in wildlife issues, my old chapter—and others, too, I'm sure—were compressed into the "among them" category tacked onto the end of the list. Chapter Chairman Ted Woodbury justifiably points out that for the past several years Great Lakes has vigorously campaigned to close Illinois' state parks to sport hunting. More recently, the chapter has been most vigilant to prevent any unwise opening of more state lands to greater recreational development, under the state's new land-use reclassification program—"unwise" in the sense of disturbing or destroying critical wildlife habitat.

Sorry! The May/June column, which purported to list *all* national Sierra Club publications, made no mention of the *Council Newsletter;* edited by Anne Van Tyne, the quarterly newsletter goes to 1100 of the Club's volunteer leaders. It provides information on the internal workings of the Club at all levels, not of just the council itself. To receive it, write to the council office at Club headquarters. There is no charge.

You CAN fight city hall! reports Gil Deane in the San Francisco Bay Chapter's newsletter, the *Yodeler*. When water district officials of suburban Marin County proposed to log the slopes of Mt. Tamalpais to raise revenue, the chapter's Marin Group and other environmentalists were shocked. They quickly organized county-wide opposition to the plan, which, it turned out, might have saved the average water customer all of $2 *per year*. Scores of phone calls and a hundred or so protest coupons from a Sierra Club ad poured into water district headquarters. Later, a parade of outraged witnesses testified at the nearly four-hour hearing. The directors shelved the plan.

Public Interest Periodicals

"Periodicals of Public Interest Organizations" is a booklet that describes and tells how to order 103 newspapers, newsletters, magazines and journals published by 96 public interest/citizen organizations. Examples: *Critical Mass Journal, Sun Times, The AgBiz Tiller* and *Sierra*. To purchase the guide or to get information about bulk orders, write the Commission for the Advancement of Public Interest Organizations, 1875 Connecticut Ave., N.W., #1013, Washington, D.C. 20009. Payment must accompany orders: $4 to public interest groups, $5 to individuals (personal checks), government agencies, schools and public libraries; $15 to all others. □

Mammals and Their Families

EDITH THACHER HURD
Illustrations by Clement Hurd

ALL MAMMALS, including humans, give birth to live babies. They do not lay eggs like birds or reptiles. All mammals have fur or hair on their bodies, even whales. All mammals are warm-blooded.

What Is a Mammal Family?

ARE ALL MAMMAL families like your family or my family? Each human family is different from every other. Each raises its children in a different way. In some human families, everybody lives together, both the mother and father help to raise their children. In other families, only the mother or only the father takes care of their offspring. These are only two of the ways that human families bring up their children.

But what about animal families? They are as different as human families—except that each species, or kind of animal, raises its young more or less the same way. That is, just about every elephant's child is fed and cared for and grows up pretty much like every other elephant's child. But each species raises its family differently from every other species, too. A baby kangaroo is not raised like a baby chimpanzee.

Let's look at three species and see how each one makes up its family.

The Kangaroo Family

THE kangaroo is a very independent animal. She mates with a male kangaroo, but he does not help to raise the young. In fact, the female kangaroo often browses over the plains of Australia and drinks at the "billibongs" (waterholes) without any other adult kangaroos at all. Sometimes she joins a "mob," or group of other male, female and young kangaroos. But she never stays with any group for long.

A mother kangaroo almost always has one baby in her pouch and a young kangaroo, called a "joey," outside the pouch to care for. When the baby kangaroo is born it is very, very small, about the size of a peanut, and it could easily curl up in a spoon. As soon as it is born it crawls slowly up its mother's furry tummy and drops down into her pouch. It drinks her milk when it is hungry and sleeps in her pouch when it is sleepy. It does not even stick its head outside the pouch until it is about four months old; at six months it jumps out and plays around or runs about with other young kangaroos, but it still sleeps and eats in its mother's pouch. By the time it is one year old the young kangaroo has learned to eat grass and leaves and other things that kangaroos enjoy. By now it is a joey, and there is another baby in its mother's pouch.

The Chimpanzee Family

MOST chimpanzees live together in a group. They almost always stay in the same group; usually they spend most of their lives with the same males and females. Only females take care of the babies, and a female chimpanzee is a very loving mother. Every night as it grows dark in the forest, she climbs a tall tree with her baby either clinging to the fur on her stomach or holding onto her back. She makes a safe nest or platform from branches and leaves where she and her baby will sleep. Young chimpanzees sleep in the nests with their mothers until they are almost five years old. By this time they are able to find their own food and make their own nests in the forest.

As they grow bigger and stronger all the young chimpanzees live and play together. They climb trees, swing from the branches, play tag and sometimes fight together. The mother chimpanzee is never far away from her young one, especially if it is playing with one of the huge males. Sometimes the males are very gentle with the little chimpanzees, allowing them to pull their hair and crawl all over them. The male may even respond by petting or tickling or sometimes even giving the little chimpanzee a rough kiss. But a male chimpanzee can also lose its temper very quickly, and male chimpanzees have terrible tempers. When this happens the mother rushes to pick up her baby and carry it to safety in the forest. Sometimes she has to cover her child with her own body to protect it. Most chimpanzees are born, grow up and stay with their own group all of their lives.

The Beaver Family

THE mother and father beaver both help to raise their young. Every spring the mother beaver has four or five babies—called "kits." When it is time for the kits to be born, the father leads the young beavers, the one- and two-year olds, out of the beavers' home, their lodge, and into a den that he has dug in the ground close to the water. He takes care of them there until the mother brings her new kits from the safety of the lodge into the pond. The small beavers can swim a few days after they are born, and they are soon diving and playing in the water with their older brothers and sisters. Only one beaver family lives in each pond, unless the pond is very big.

Mother and father beavers are never far from their young. When the mother or the father slaps its big flat tail on the water, the young beavers know this is a sign that danger is near and they dive deep into the pond or swim to the safety of their lodge. The young beavers learn from their mother and father how to go onto the land to cut down trees with their long, sharp teeth. They cut these trees into short logs, both for food and for repairing their dam, because their pond always must be kept full of water. The logs and branches also are used to fix the lodge, and some are stored in piles under the water to be used for winter food.

As the young beavers grow older, they must leave the pond where they were born, so that there will be room for the new little kits born each spring. The young beaver goes along the rivers and streams until it finds another young beaver; then, together, they too build a dam for a pond and a lodge where they will bring up their own family just as they were brought up. □

Edith Thacher Hurd and Clement Hurd have worked together for many years writing and illustrating children's books. This article was adapted from three books in the Hurds' series on animal families published by Little, Brown and Company: The Mother Beaver, The Mother Kangaroo *and* The Mother Chimpanzee.

Problems With Ports
In spite of the Administration's attempts to limit energy imports, plans are moving ahead to establish major new port and harbor facilities for foreign oil and gas, and some of the facilities will have major environmental impacts.

The Federal Energy Regulatory Commission has voted to allow California's two major natural-gas companies to build a liquefied natural gas (LNG) terminal near Point Conception. In doing so, the commission rejected the findings of its technical advisory committee, that the plant should be located in Oxnard because of the greater earthquake danger at Point Conception. The $618-million LNG plant would be the first on the West Coast and would receive gas from both Indonesia and Alaska. Environmentalists do not like the use of Point Conception, which has already been approved by California's Public Utilities Commission, because the site is one of the last pristine areas on the California coast. Native American groups have also protested because Point Conception is a sacred Chumash burial area.

In Texas, the Club's Galveston Group is struggling to prevent construction of a crude-oil terminal on Pelican Island to service "very large crude carriers." The project would involve deepening the ship channels well out to sea. The Club is concerned about the damage that channel deepening and pipeline construction would have on marine life and air quality, and about the dangers of explosions and fire posed by maneuvering huge tankers in Galveston Harbor. The U.S. Army Corps of Engineers has recently issued a final environmental impact statement on the project but has not yet issued a permit.

Club Receives a Grant for Public Education on Toxics
The Sierra Club has received a grant from the Environmental Protection Agency to prepare four educational courses on the problems of toxic substances, including hazardous wastes, toxic substances in the air and water, and pesticides. The Club will prepare nontechnical materials for use by citizens and will work with task forces in the Southeast and Southern Plains. It is hoped the courses will lead to effective citizen involvement and action. For more information, write to: Toxics, Conservation Department, Sierra Club, 530 Bush St., San Francisco, CA 94108.

Report Ready on Population Projections
A report describing how all 50 states are implementing Environmental Protection Agency (EPA) guidelines on the use of population projections in water-quality planning has been prepared by the Sierra Club. Projections determine the amount of federal money available for a community's sewage-treatment facility and can therefore be powerful influences over how much growth takes place and where. The report, prepared under a grant from EPA to the Sierra Club, describes the EPA guidelines in simple English. While analyzing the poor performance of most states in effectively involving the public in selecting projections, the report indicates many opportunities for public involvement. A limited number of copies of the report are available; for more information, write to: Judith Kunofsky, Sierra Club, 530 Bush St., San Francisco, CA 94108.

Administration Scuttles East Coast Marine Sanctuary Plan
A proposal to help preserve Georges Bank, one of the world's richest marine life areas, by designating it a marine sanctuary, has been thwarted by the Administration. Bowing to pressure from the Department of the Interior, which wants to make the area off the coast of New England available for offshore oil and gas leasing, the Department of Commerce dropped consideration of the sanctuary proposal. This decision followed a series of hearings that showed overwhelming public support for the sanctuary concept, and environmentalists in New England are outraged. In place of the sanctuary plan, the Commerce Department has proposed setting up an interdepartmental advisory task force to monitor the area.

Carter Backs "Year of the Coast"
Efforts to protect the nation's coasts got a boost from President Carter; in his recent environmental message, he endorsed 1980 as the "Year of the Coast." The Sierra Club has joined an array of other conservation groups in a campaign to focus greater public attention on the value of the coasts and the dangers they now face. (For more information, write to: COAST, Stn. S, PO Box 2708, Washington, D.C. 20013.)

The President also proposed reauthorizing and strengthening the Coastal Zone Management Act, and he proposed a sweeping review of federal programs that significantly affect coastal resources. His plans for reinforcing the act include establishing a national coastal protection policy and encouraging states to include in their coastal plans public access to the beach and the protection of certain natural resources.

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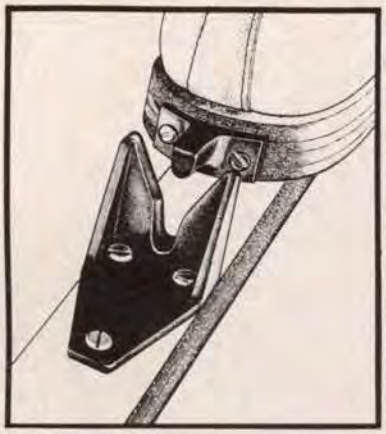

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