

# Sierra Club Bulletin <sup>\$1.00</sup>



November/December 1975

*Write Your Congressmen!*  
*See Page 25*

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**F**OR 83 YEARS the Sierra Club has defended wilderness and the integrity of nature. To protect and conserve the natural resources of this planet; to preserve the quality of our environment; to restore what has already been needlessly spoiled: these are the ends toward which the Sierra Club applies its strength.

**SIERRA CLUB LEGAL.** In recent years the Club has found it increasingly necessary to turn to the courts to force compliance with environmental protection laws. This is the task of the Sierra Club Legal Defense Fund. Without this legal pressure, many of our best statutes would be empty pronouncements of good intent.

**INFORMATION/EDUCATION.** Through its books and periodicals, films and exhibits, the Club points out the challenge we dare not fail to meet: to formulate a sane and tenable relationship between the human race and the fragile world that sustains us. Sierra Club outings have taken on new meaning as lessons in "walking lightly" on our vulnerable land. Rock climbing, winter camping, ski touring, kayaking, scuba diving, mountaineering: Sierra Club classes, formal and informal, teach these and other skills. The themes are safety and respect for the land.

**LOBBYING.** The Club's essential work is to promote sound laws and policies and, more fundamentally, the climate of opinion that allows these laws and policies to succeed. The Club's small hired staff spends most of its time in this field. The real momentum, however, comes from thousands of active Club members offering uncountable thousands of hours of volunteer service, backed by the dues and contributions of the entire membership.

**SERVICE TRIPS.** Wilderness survey trips to endangered areas gather the data the Club must have to lobby for preservation. Trail maintenance trips and clean-up trips combine fun and service. "Inner City Outings" conducts first-time wilderness trips for the urban young. For some participants, these experiences may be the start of lifelong friendships with the land. We hope that all will come away with at least a little more awareness of what a gift the natural world is—and how greatly it deserves our care.

There is everything to be done, most of it at chapter and group levels: complex issues to study and understand, policy to debate, meetings and hearings to attend, news to spread, letters to compose.

In the search for solutions that are long-lasting, the Club must constantly communicate: with legislators, leaders in business, labor, minority groups, and many others. The lack of such contact could be crippling.

**RESEARCH.** The Club's office of environmental research surveys the work of experts in many countries and carries out its investigations in such fields as geology and forestry. This scientific back-up helps the Club define its policies and state its case to the public, to legislators, and to courts.

**CONTRIBUTIONS TO THE SIERRA CLUB.** The effort we make is costly, but the stakes are huge. Gifts made directly to the Club are applied largely toward lobbying efforts, and can no longer be deducted from the donor's taxes. If a deduction is important to you, we invite you to consider a gift to the Sierra Club Foundation, which funds educational, legal, scientific and literary projects. Consider also a bequest to the Sierra Club: such a gift is a strong personal statement, and a legacy that will live.

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**Sierra Club**



# Sierra Club Bulletin

NOVEMBER/DECEMBER 1975 / VOLUME 60 / NUMBER 9

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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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Photographs by David Halpern

## Wichita Mountains National Wildlife Refuge

# OKLAHOMA'S GRANITE PARKLAND

DAVID HALPERN

**M**ORE THAN A MILLION visitors each year enter the Wichita Mountains National Wildlife Refuge in southwestern Oklahoma. While several thousands come from out of state to observe the wildlife and examine the extraordinary geological features of the area, the majority are local residents who come to swim, boat, picnic, and camp out on weekends. Local environmentalists have become increasingly concerned about the impact of recreational activities on this last wilderness stronghold in Oklahoma, for although the Department of the Interior has adopted a policy de-emphasizing recreational uses not directly related to the basic purposes for which all refuges have been set aside, strong local lobbies are winning the support of congressmen and other influential government officials in the attempt to "preserve" the refuge as their own regional "playground."

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*David Halpern is a freelance writer living in Tulsa, Oklahoma.*

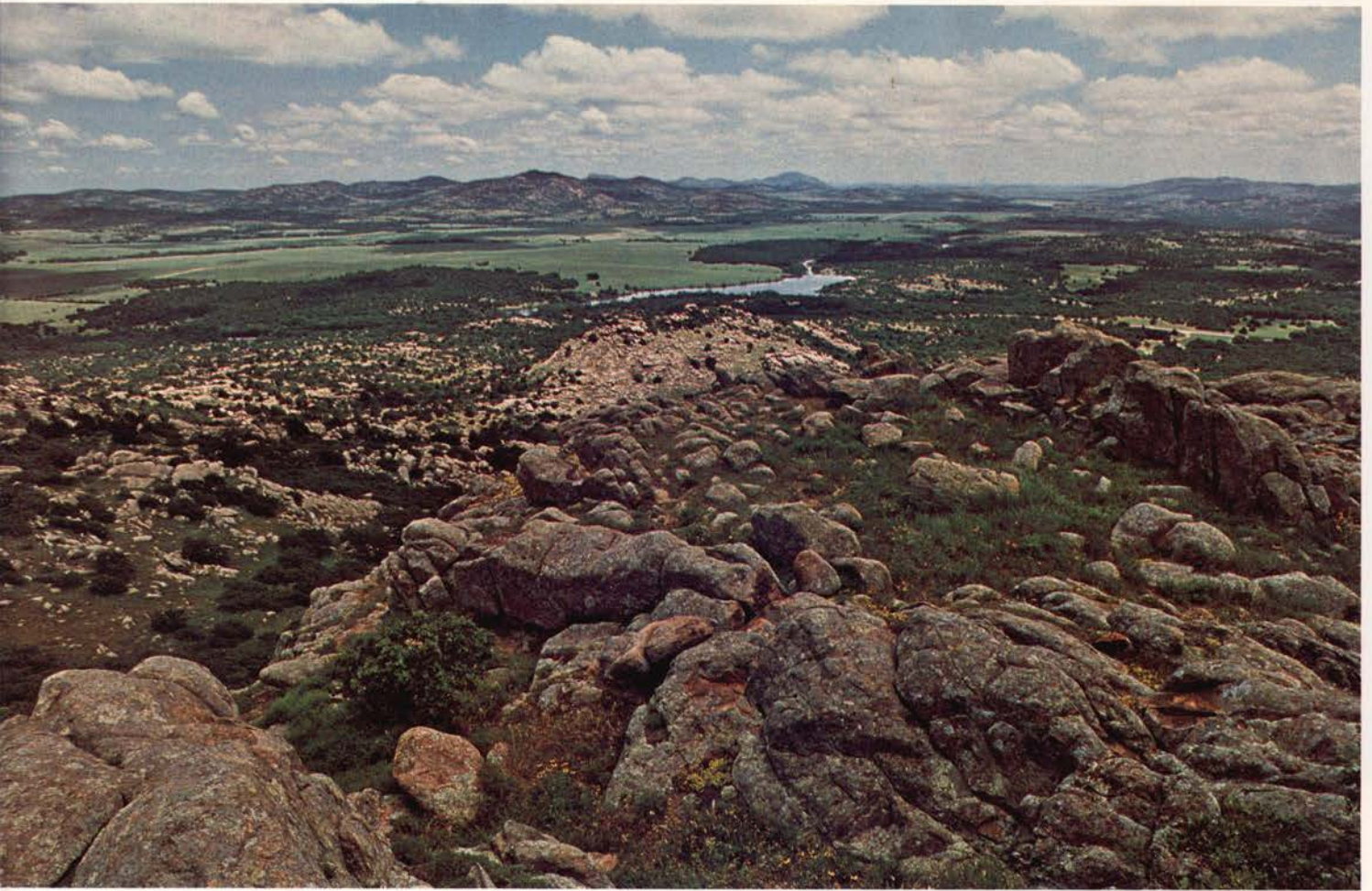
As Andrew T. (Tom) Dalton, chairman of the Sierra Club's Oklahoma chapter, explained, "Wildlife-oriented recreation is clearly within the spirit of the refuge's multiple-use concept, so long as recreational uses are limited to avoid adverse effects on both wildlife and the using public." But Dalton believes, as do other concerned Oklahomans, that current recreational activities in the Wichitas include much that is abusive. "We have to try to get people to understand what this unique area is," Dalton said, "to appreciate its ecological characteristics, its primitive qualities, the land values represented here and the refuge's historical and cultural significance."

The geologic history of the Wichita Mountains has been traced back almost 600 million years. Some geologists believe that as recently as 300 million years ago, the Wichitas may have stood higher than the Rockies, but the generally accepted view is considerably more conservative.

The latest explanation of their

origin begins with immense forces within the earth pulling at the billion-year-old foundation rocks, stretching the crust. About 550 million years ago, as this stretching continued, the surface of the land between what we know today as Texas and Kansas began to sag and fill with sea water. Sand and mud were carried into this shallow arm of the ocean from numerous streams and later formed sandstone and shale.

Continued stretching of the crust created a major change within the earth about 525 million years ago. Heavy, dark-colored rock deep below the surface began to melt, creating magma that was forced up through the old foundation rock and through the sandstone and shale, turning these into quartzite under heat and pressure. Some molten rock spilled out into the water where it cooled rapidly and shattered, forming basalt. But most of the magma stayed beneath the surface where it cooled slowly into a gray-to-black rock called gabbro. The basalt has since been covered by other



rock and cannot be found on the surface, but outcrops of gabbro can be seen in several areas of the present-day Wichitas.

Almost immediately, another and very different magma began to form, believed to be of granitic origin and derived from the foundation rocks. Spilling upon the surface, this magma created rhyolite, and below the surface it hardened into the red Wichita granite that characterizes the mountains today.

For 250 million more years, the area of the Wichitas continued to stretch and once again it sank beneath sea waters. Then, gradually, the earth's forces changed direction and the crust began to squeeze back together. The mountains again became uplifted, folding, faulting, and forming peaks that emerged as islands in a shallow sea. They remained as islands, protected from erosion by layers of sediment that were finally stripped away by a broad gentle uplift "only" a few million years ago.

Most geologists conclude that the

mountains we see today are much the same as they appeared 250 million years ago. The tallest—Mt. Pinchot—stands only 2,479 feet above sea level, but the area's massive boulders and rugged canyons provide a dramatic contrast to the flat or sometimes gently rolling landscape typical in this part of the Southwest.

I "discovered" the Wichitas in April, 1974, just over a year after moving my family to Oklahoma. I was fascinated by the terrain, which in places somewhat resembles Sierra high country, and in others looks like the African veldt. Nowhere is it like the rest of the "Sooner State."

But I was surprised to find that, except for residents of Oklahoma City and nearby Lawton, Fort Sill, and Wichita Falls, Texas, most people—including many native Oklahomans—are unaware of the refuge. Mention it in eastern Oklahoma and people assume you're talking about their colorful Oachita Mountains (pronounced Wa'-shi-ta). But if you tell them you're going to the Wichitas

to do some rock climbing, they realize their mistake and usually ask, "The Wichitas? What state are they in?"

Once the land of the Apache, Comanche, Kiowa and Wichita Indians (from which the mountains take their name), this nearly ninety-two-square-mile area of southwestern Oklahoma was set aside as a forest reserve by President McKinley on July 4, 1901. Local efforts to have the area declared a national park failed to receive congressional support, so conservationists appealed for presidential action just in time to save the mountains from settlers who had begun to descend on the territory in August of that same year.

Theodore Roosevelt transferred the area to the Department of Agriculture's newly formed Forest Service in 1905, and proclaimed it a game reserve for the purpose of protecting endangered species. Six small national wildlife preserves already had been set aside to protect birds and migratory waterfowl, but the Wichitas became the first national sanctuary for

the vanishing big-game animals of North America and were a precedent for the creation of other wildlife refuges. Since 1939, the Wichita Mountains Wildlife Refuge, like all the 30.5 million acres of the national wildlife refuge system, has been administered by the Department of the Interior's U.S. Fish and Wildlife Service.

By 1905, all the native big-game animals of the Wichitas had been killed, and steps had to be taken to reintroduce wildlife from other parts of the country.

American bison were the first animals to be returned to the Wichitas. In 1907, with intricate planning and considerable difficulty, the first fifteen buffalo were shipped by rail from the New York Zoo as a contribution of the American Bison Society. It took almost five years for the herd to double in size, but thereafter the animals prospered. The Wichita buffalo herd currently is maintained at around 600 head.

Rocky Mountain elk were imported from Jackson Hole, Wyoming, in 1911 and 1912, since the last of the indigenous Merriam's elk was killed in 1881.

From 1911 to 1922, there were five unsuccessful attempts to stock the refuge with pronghorn antelope from Yellowstone and Alberta, Canada. The delicate animals either died of injuries sustained in their long train rides or from diseases contracted in their new and unfamiliar environment.

Settlers had killed all the wild turkeys in the area by 1910, so, with loving care, Mrs. Frank Rush, wife of the first manager of the new wildlife reserve, raised a nucleus of a new flock from stock imported in 1912. By 1925, the birds were so numerous it was possible to capture them to stock other game sanctuaries.

Longhorn cattle were introduced to the refuge in 1927. Once threatened with extinction through cross breeding for the purpose of producing better beef cattle, this hardy and imposing species now thrives in the Wichitas, and the refuge herd of 300 animals is generally regarded as the finest in the nation.

Among the larger animals, only the white-tailed deer did not have to be reintroduced to the Wichitas. Surviving the settlers' onslaught by retreating to the more remote parts of the mountains, they thrived under refuge management. Around a thousand of these graceful creatures currently live within the refuge boundaries.

Today's observant visitor to the Wichita Mountains can also see a wide variety of smaller wildlife, including coyote, armadillo, prairie dog, skunk, raccoon, deer mouse and numerous reptiles, including the colorful "mountain boomer" or collared lizard. The Wichita bird list contains 241 species, including more than fifty that nest on the refuge.

Although I am constantly on the lookout for wildlife, my greatest love is for the Wichita wildflowers. It was

the vibrant color on the mountain slopes and the seemingly endless variety of plant life than can be seen from season to season that stimulated my first explorations of the mountains.

In the southwestern corner of the refuge is the Charons Garden Wilderness Area, 5,000 acres of the most rugged terrain in the Wichitas. On my first visit, I could not resist the challenge that lurked behind its massive boulders, and so I set out one afternoon with my two sons, my cameras, and my sturdy tripod that is often used as a three-pronged walking stick, across the eastern side—from the refuge road below Bat Cave Mountain, over Mt. Lincoln to Treasure and Post Oak Lakes. I became so intent on examining the tiny plants that sprang from virtually every inch of soil between the granite rocks that I almost lost track of time. We met no other people in this back-country area, although we did find all too many signs that careless humans had been there.

But, once we neared the top of Mt. Lincoln, signs of other visitors disappeared and we felt alone and awed by the silence. We paused to rest below the giant granite spheres that form the summit. Although we would have liked to take in the view from the top, we were unprepared to scale the sheer rock and had to take a safer route around the barrier.

On the western side of Mt. Lincoln is a steep drop-off that is difficult enough to climb without a rucksack or photographic equipment. The formidable granite and dense scrub oaks seem to block every likely path to the valleys below and one must scramble down as best he can. But the scramble is worth it, for in this gently rolling area of Charons Garden are abundant wildlife, streams, and magnificent fields of wildflowers crossed by elk and buffalo trails. Here a person can truly be alone with nature. Few visitors will venture into this part of the wilderness.

On my next visit, I hiked farther into Charons Garden, following an unmaintained trail from Sunset Pool at the base of Elk Mountain on the north, to Post Oak Lake about three and a half miles to the south. By now I've been over this trail half a dozen times and I've never walked it the same way twice. For most of the distance, you follow a stream bed. On



*American bison were returned to their former range in the Wichitas in 1907, when fifteen animals were shipped there by rail from the New York Zoo.*

the most tedious section, through what are known as the "Rock Rooms," the hiker must climb from stone to stone *in* the stream as he makes his way between granite walls that rise almost straight up on either side.

A pleasant surprise along this trail is a grove of sugar maples guarding the northern end of the Rock Rooms. Rarely found this far south or west, these broad-leaf trees provide welcome shade in summer and exciting color in the fall. About a quarter of a mile south of the Rock Rooms are three old mine shafts abandoned by early prospectors who picked and blasted forty-two holes here before abandoning their efforts in the early 1900s. Following a stream down the mountains from the mines, you suddenly come upon a waterfall that plunges forty feet into a clear, cool pool. A favorite resting place for hikers, it is one of the few places in Charons Garden where you are likely to meet other people.

On the refuge's more than 22,000 acres of public-use land, there is plenty to do and see. And, since all the animals roam freely, it is possible to have an exciting visit even if you aren't a hiker. A large prairie-dog village at the intersection of the main east-west and Cache roads is a popular attraction, and roadways take you from there to all corners of the refuge. Tours from the Quanah Parker Visitors Center, weekend campfire programs at Camp Doris (throughout the summer) and a self-guiding nature trail at French Lake help visitors to understand and appreciate the natural features.

To an avid hiker, the Wichita trails may seem short, but one can always strike off across country and cover fifteen miles or more in a day. (Just watch out for rattlesnakes; this is their favorite kind of country.) Every visit to the refuge is a fresh and memorable experience in some way. The sight of newborn buffalo calves or wild turkeys in flight, a chance to watch a pack of coyotes at play or see a sunset from Rush Lake—these are typical of the exciting events that grow more numerous and varied as I spend more and more time in the Wichita Mountains.

The only unnatural features of the Wichita Mountains Wildlife Refuge are its lakes. Built mostly in the 1930s by the CCC and WPA, the majority of the lakes are relatively small. There

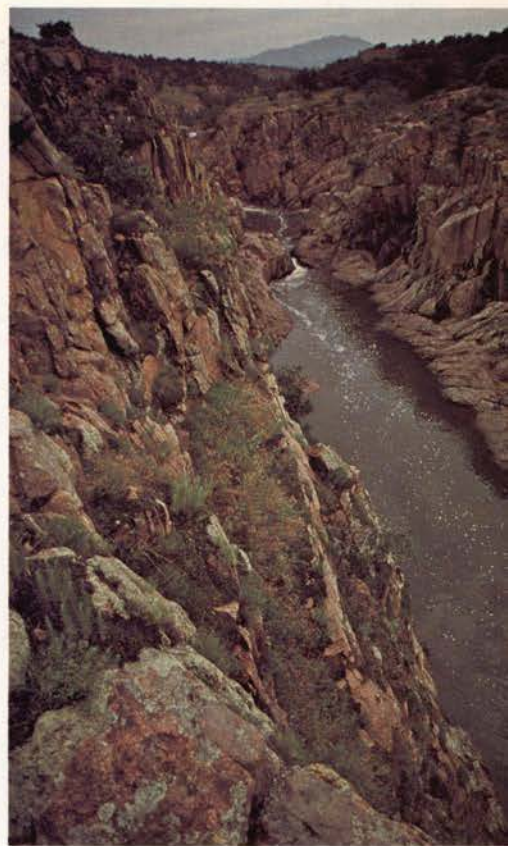
are fifteen smaller than a dozen acres in size and only two larger than 100 acres. The largest, Elmer Thomas Lake—half on the refuge and half on the adjacent Fort Sill Military Reservation—covers 326 acres. Visitors have easy access to more than fifteen lakes where fishing is permitted and where they can observe an abundance of wildlife. Swimming and boating, however, is limited to Elmer Thomas Lake where lifeguards are provided and the surface does not conceal dangerous underwater rocks.

Limiting public use in this way is consistent with the concept of a wildlife refuge, but some people fear this will lead to closing the refuge to all public use. Despite assurances to the contrary, groups such as KTRO (Keep the Refuge Open), headquartered in Lawton, have fought all efforts to limit public access and recreational activities.

In a 1973 statement to former Oklahoma Governor David Hall, refuge manager Roger Johnson wrote, "The Wichita Refuge is a classic example of the two major dilemmas facing public land managers today. One of these has to do with meeting our natural resource-management responsibilities in a time of extremely limited funds and manpower. The other concerns the proper use of lands that are literally 'loved to death' by the people who find wildlife and wildlands attractive."

But the problems facing the refuge today are more than the result of people loving it to death. I have witnessed violations of almost every regulation, ranging from abuse of wildlife to destruction of refuge property. Some violations of the rules are mindless, as, for example the one visitor I saw trying to get the attention of an elk by hitting rocks at the animal with a golf club. The most distressing abuses of the refuge are by the military. Helicopters from Fort Sill, permitted to practice landings on designated parts of the refuge, sometimes use areas to which they have not been granted access. Jet fighters from nearby bases frequently fly low over Charons Garden. The noise is often so loud that you cannot have a conversation with other hikers on the trails.

Abuses notwithstanding, the management of the Wichita Mountains Wildlife Refuge is making some progress and taking positive steps in



the area of environmental education. New programs are being implemented for children and adults. Trails, exhibits, and interpretive displays are being used to inform visitors of the values of wildlife and other natural resources.

But the battle is an uphill one. Indeed, it may be years before local concern can be turned to the side of wildlife management and away from nonwildlife-oriented recreation. To deal effectively with the situation, one first has to understand that the people of this part of the Southwest have a different outdoor orientation than people in some other parts of the country. According to Tom Dalton:

The outdoor experience in this state has been oriented to flatwater recreation. All of our state parks have grown up around dams and other manmade developments and, until recently, little attention was devoted to trails and nature. The concept of being outdoors has not been related to our existing natural resources, and we need to move more in that direction. We need to get environmental concepts across to more educators and policy makers and into our public schools at an early stage. We must neutralize existing apathy and prevent further degradation while building respect for this refuge and for refuges in general among future leaders.

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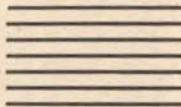
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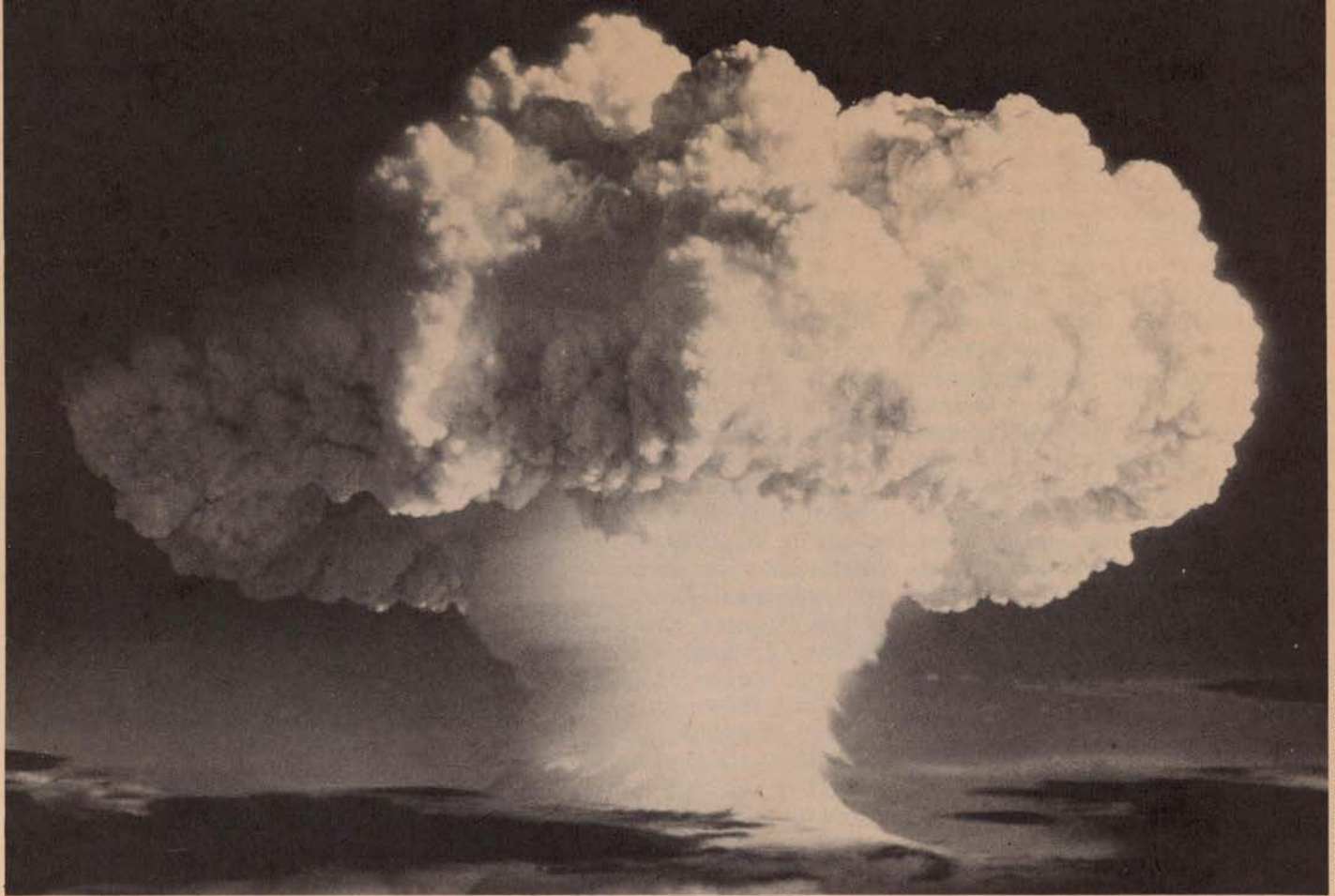
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# Nuclear Terror

L. DOUGLAS DeNIKE

**A** WEARY VOICE mutters from the mouth of a cave, "You know, next time we've just got to write an environmental impact statement on nuclear war . . ." Next time? Why not this time? An EIS on nuclear war might be exceedingly valuable, as well as pleasingly impudent.

Volume I, *Environmental Impact of Preparations for Nuclear War (Weapons Manufacture)*, could be published almost immediately. It would borrow generously from Roger Rapoport's *The Great American Bomb Machine*, H. Peter Metzger's *The Atomic Establishment*, and Herbert F. York's *Race to Oblivion*. It would

describe the cesium-137 that escaped from the storage facility at Hanford, Washington, and was detectable all the way across the Pacific Ocean to Japanese waters [1]. It would detail how plutonium from the Rocky Flats nuclear weapons factory in Colorado became concentrated in the ovaries of cows grazing nearby [2]. It would tell why hundreds of lung-cancer deaths are expected among American uranium miners [3], and why 250 square miles of Nevada are unusable by human beings indefinitely [4].

As crime and terrorism continue to mount, the line between peaceful and aggressive uses for nuclear technology becomes increasingly harder to draw. Nuclear-electricity generation and atomic-weapons manufacture involve much the same know-how and materials. Nuclear bombs and radiological dispersal devices represent unprecedented political power to the enemies and irrational "saviors" of

society. In one year of operation, a 1,000-megawatt reactor produces plutonium sufficient for at least twenty "crude" A-bombs [5]. Such weapons would have lower reliability and yield than those made from high-quality military plutonium, but they would be quite acceptable to extremists and small powers. Once a nation which already has power reactors acquires a spent-fuel reprocessing plant, it can make its own plutonium bombs. Even without reprocessing, any such country can attach explosive "shaped charges" to a loaded spent-fuel cask to make a ship-deliverable radiological dispersal weapon capable of emptying a seaport.

Anyone who gains possession of a nuclear bomb acquires the means to substantially destroy a national government, and thereby becomes an army unto himself. We recall the "great equalizer," the six-gun of the Wild West, ancestor of the "Saturday

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night special." The fact that every man packed a revolver on his hip did not mean that no one got shot. Many armed people got shot by those who were either quicker on the draw or who fired without warning.

If nuclear power and nuclear weapons are Siamese twins, then a joint evaluation is long overdue. Such an impact report should discuss some ruinous possibilities. Consider, for example, anonymous atomic blackmail of the wealthier national governments, or corporations within them. General scenario: A poor country steals or fabricates nuclear-bomb components and has them smuggled into the United States. The weapon is assembled in Washington, D.C. The President receives an ultimatum, demanding massive aid or policy concessions for a list of a half-dozen needy nations. The threat is accompanied by photographs of the warhead with the Washington Monument in the background, credible blueprints, and a sample of plutonium or highly enriched uranium. Retaliation is impossible. The terrorists cannot be located, and the President would

hardly fire ICBMs at the capitals of the six countries named on the extortion note — none of which may have originated the threat. He would have to acquiesce, or face loss of the nation's capital city.

Can high-level diplomacy separate the Siamese twins? Some ultra-secret intergovernmental meetings have been held to discuss improved safeguards for the mushrooming international nuclear-electricity business [6]. It is none too soon. By the early 1980s, ten more nations will join the present nineteen countries producing power from atomic fission. Rumors circulate of probable future A-bomb development in such diverse places as Argentina, Brazil, Egypt, Iran, Libya, Pakistan, South Africa, South Korea, Taiwan, and Turkey [7]. Reactor vendors in developed countries have shown little hesitancy over lack of safeguards. American nuclear companies are as eager to sell to oil-rich Iran as were other American firms to sell \$10 billion in sophisticated arms to Persian Gulf nations since 1973, while continuing to arm Israel [8]. When in World War I, some manufacturers freely sold ordnance to both sides, they were called "merchants of death." The term appears due for a revival. A nation that chooses to import enormous quantities of oil has to export something to pay for it. It doesn't have to be technology and matériel that could be turned against us or our friends.

It took a lawsuit by the Sierra Club and three other environmental organizations before the United States government agreed to prepare an EIS on its nuclear-power export activities. Despite growing recognition of the inadequacy of current policies and programs to control the proliferation of nuclear technology, the draft EIS released in August, 1975, peremptorily rejects — after a scant eighteen pages of analysis — all alternatives to "present and evolving policies" [9]. In the words of Eldon Greenberg, attorney for the Sierra Club in the nuclear-power-export litigation [10], "The draft impact statement is yet a further indication that the federal government is failing to seriously cope with the monumental risks associated with the potential spread of nuclear-weapons capability."

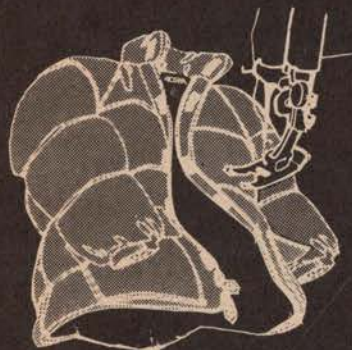
Internationally, things are no better. The Nuclear Non-Proliferation Treaty (NPT) review conference held

in May, 1975, ended without visible results, and was followed by a multi-billion-dollar agreement between Brazil and West Germany. The compact included provision of fuel-reprocessing and uranium-enrichment technologies to Brazil [11]. Thus supplier nations continue shortsightedly to pursue their commercial interests, while the safeguards machinery set up under the NPT cannot prevent gross abuses. Several important countries have not signed or ratified the treaty. The International Atomic Energy Agency (IAEA), which "enforces" NPT, is merely an understaffed inspection and reporting unit, with no authority to arrest even if it were to directly observe diversion of fissile material from the nuclear-power fuel cycle [12]. Punitive expulsion from IAEA simply would cause the expelled nation to thenceforth buy its uranium from a nonsignatory state. Or from thieves. About \$2.5 million worth of uranium concentrate was reported stolen from a mine and processing plant at Jaduguda, India, and was apparently being smuggled into China and Pakistan [13].

Nuclear energy and nuclear destruction are conjoined in more ways than one. Another set of possibilities involves the use of atomic weapons against atomic power stations. The United States has fifty-six such targets today, and the present administration desires 200 by 1985. The federal government acts as if it were obvious that anyone with a nuclear warhead would detonate it somewhere else, even though the combined explosion of warhead and power plant would multiply the bomb's fallout more than a thousandfold [14]. The same government notes that a one-megaton weapon detonated within two and a half miles of a power reactor would be capable of breaching the reactor's containment and damaging its primary cooling system [15].

The possibility of nuclear-plant sabotage has been officially recognized. In October, 1974, the General Accounting Office of Congress made the following remarkable charges in a letter to the Atomic Energy Commission (AEC): "Licensee and AEC officials agreed that a security system at a licensed nuclear power plant could not prevent a takeover for sabotage by a small number — as few, perhaps, as two or three — of armed individuals. There is one vital area —

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the used-fuel storage facility — which seems to warrant establishing additional security requirements as soon as possible" [16]. No new power-plant security regulations had been adopted as of October, 1975.

The results of sophisticated sabotage could be even more severe than the well-known predictions for an accidental core-meltdown disaster. A maximum meltdown accident could kill as many as 2,300 people, make 5,600 acutely ill, and cause 3,200 latent cancers, according to the AEC's draft "Rasmussen Report" released in 1974 [17]. Several billion dollars' worth of property damage could ensue due to radioactive contamination; forty square miles might have to be evacuated and 40,000 square miles monitored to detect radioactivity in milk. Critics of the AEC's study anticipate casualties roughly ten times as high [18]. Last May, two terrorist bombs slightly damaged a power reactor under construction at Fessenheim, France [19]. The following month, terrorist explosives simultaneously detonated at Framatome's main computer at Courbevoie, and in nuclear workshops at Argenteuil, France [20]. Are terrorists in America reliably different from their French counterparts?

Another item never mentioned in cost-benefit analyses of nuclear power plants is malicious dispersion of radioactivity in cities. In this respect, it is surprising that nuclear power is promoted in the name of providing jobs, for nothing could create unemployment faster than deliberate, or accidental, nuclear contamination of urban areas or key buildings. Particulate radioactive materials are the ultimate pollutants, destroyers of economic value, and disrupters of civil order. The cost of decontaminating cities fouled with atomic fallout is a military secret, but some idea of the expense, time, manpower, equipment, and training involved may be gleaned from the book, *Nuclear Theft: Risks and Safeguards*, by Mason Willrich and Theodore B. Taylor: "The dispersal of very small amounts of finely divided plutonium could necessitate evacuation and decontamination operations covering several square kilometers (one square mile equals 2.6 square kilometers) for long periods of time and costing tens or hundreds of millions of dollars. The damage could run to many millions of dollars per

gram of plutonium used" [21]. Edward Martell, a nuclear chemist, has stated, "In the not-too-unlikely event of a major plutonium release, the resulting contamination could require large-scale evacuation of the affected area, the leveling of buildings and homes, the deep plowing and removal of topsoil, and result in an unpredictable number of radiation casualties. . ." [22]. The AEC, in its 1974 "GESMO" environmental-impact statement on plutonium recycling, calculated that the release of 4.4 pounds of particulate plutonium at ground level would induce cancer in *all* inhabitants 1,000 feet downwind, and in one percent of the inhabitants even forty miles downwind [23]. The cancer hazard from inhalation of common fission products, such as strontium-90 or cesium-137, is comparable to plutonium [24].

If nuclear power is allowed to proliferate, can all the cobras be kept in the basket? Retired Rear Admiral Gene R. La Rocque, who directs the Center for Defense Information in Washington, thinks not. Increasing numbers of governments will be tempted to build nuclear weapons, either secretly or openly, and to use them defensively or pre-emptively. Moreover, there is the problem of terrorist thefts from military stockpiles, and use by field commanders without permission. "Certainly within ten years, we'll see an atomic explosion unauthorized by a government," Admiral La Rocque predicts [25]. Could it be prevented by electronic "permissive action links" (PALs), which require a special signal in order to arm a bomb? No, he says, for two reasons: First, in nuclear warfare, minutes count. The military can't risk being dependent on a permission station that could be jammed or destroyed. Also, existing PALs malfunction often enough during practice drills that getting around them has become a regular practice. On any nuclear-armed U.S. Navy ship, there are four or five technicians trained to do this. Thus, knowledgeable thieves could detonate a bomb once they had stolen it. How probable is successful theft? In September, 1974, Admiral La Rocque charged that a well-planned terrorist attack could capture American atomic warheads stored in allied countries overseas [26]. In April, 1975, the General Accounting Office stated that Army and Navy

practices in shipping nuclear weapons along the nation's highways made them vulnerable to terrorism [27]. As for portability, a man could carry a Hiroshima-yield bomb under each arm, thanks to improvements in miniaturization [28].

Admiral La Rocque thinks it unlikely that governments would often "leak" bombs to terrorists for untraceable atrocities, but he grants the possibility that Arab nations could thus use the Palestine Liberation Organization to blackmail Israel. La Rocque estimates that within ten years, Israel will have enough plutonium reprocessed from its Dimona research reactor to manufacture thirty atomic bombs. It is widely speculated that Israel possesses six to ten nuclear weapons already [29]. Testing prior to first use is considered unnecessary; no nation's first atomic test has yet been a dud.

Nuclear power is even more enticing to poor nations than to developed ones. Some less-developed lands are low in fossil fuels. They can leapfrog over research-and-development costs by buying nuclear hardware and know-how from outsiders. Nuclear installations give impoverished nations prestige, scientific capabilities, and real or apparent weapons potential, which comes in handy for saber-rattling purposes. As leisurely diplomatic epicures nibble at the cheese of meaningful safeguards, can we expect truly effective international control of the "peaceful atom"? No, says the

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admiral. He believes that each nuclear-power nation must voluntarily impose strict controls *on itself*, that there is no international group that can do so. This sounds like a recipe for Armageddon stew. Following the inevitable tragedy or tragedies, better things may emerge. La Rocque says, "I'm afraid some rather dramatic event is going to have to take place" before stronger measures will be acceptable to sovereign governments.

Apparently we are asked to witness the planet's second atomic war, or loss of New York or Los Angeles, before real control will become possible. Yet the evidence from the Hiroshima and Nagasaki bombings, recently refreshed by the thirtieth-anniversary commemoration of these events, should be convincing enough. Nothing is gained from delay. Given even one conflict involving nuclear-weapons states, atomic warheads by the score would slip into unauthorized possession, and nuclear power plants would be destroyed or abandoned.

The United States continues to complete one nuclear power plant each month [30], and three additional

hydrogen bombs *each day* [31]. The probability of our using nuclear weapons in defense of allies has increased because of our demonstrated unwillingness to fight an inconclusive conventional war in Indochina. Secretary of Defense James R. Schlesinger has said that American "nukes" might be used to defend Europe or South Korea, up to and including first-strike use. The likelihood that any new brushfire war might become nuclear, or that America might choose noninvolvement, is an incentive for more countries to develop their own atomic *forces de frappe*.

Perhaps the end will come with a whimper rather than a bang. Covert radiological warfare could cripple any nation without its immediate awareness. The downtown cores of the hundred largest American cities, for example, could be made uninhabitable by two foreign students on their summer vacation. The whole job would require roughly 100 pounds of power-reactor-grade plutonium or strontium-90 particles. A pound of either one, tied to the underside of a taxicab in a leaking container, would create an insidious cancer-induction hazard over several square miles [32].

Urban guerrillas seem already to have discovered the blackmail and terrorism potential in radioactive contamination. Several gamma-ray thickness gauges have been stolen from construction sites. Last May, Argonne National Laboratory "lost" a small calibration sample of plutonium-239 [33]. In July, "a huge cache of radioactive materials and volatile chemicals" was found by police in a duplex near the University of California campus at Berkeley [34]. The unidentified radioactive substances included alpha-emitters. Since roughly one and one-half ounces of plutonium or almost any other alpha-emitter could contaminate a square mile to evacuation levels, it is time to take notice when any amount of them slips out of authorized channels [35].

What is the future of civil liberties and democratic government in a world that bases its energy and security systems on ultra-toxic, nondegradable biocides? Already our government is seriously considering infiltration of citizen groups to head off would-be plutonium thieves [36]. In the event of a credible nuclear terrorism threat, any government would be compelled to use every means possible

to locate its source. This would include brutal interrogations and searches based on the scantiest information. Even the tightest controls on a domestic population would not eliminate the possibility of nuclear smuggling from abroad. Are we prepared to change our entire way of life in order to raise turbine steam by splitting uranium atoms?

There is no need to do so. We continue to hear of research breakthroughs in other energy sources. In August, 1975, the federal Energy Research and Development Administration predicted that twenty-five percent of the nation's energy could come from solar technologies by the year 2020 [37]. This would be equivalent to 100 percent of our present energy consumption. There exists at least 200 years' worth of coal in the United States, even if utilized at exponential rates. Only a small fraction of it would require strip mining, and, with improved technology, it could be deep-mined and burned much more acceptably [38]. Controlled nuclear fusion, if it proves practicable, bodes an energy conversion technique whose fuel is essentially limitless and whose radiological hazard is manageable [39].

Even assuming that nuclear-fission plants worked reliably and could be safely deployed in today's geopolitical conditions, we still might not rejoice. The role traditionally played by energy in industrial society is to cause natural resources to be consumed more rapidly. Donella Meadows and associates, in their epochal computer study, *The Limits to Growth*, postulated for purposes of analysis that "unlimited" nuclear energy might double resource reserves and make extensive programs of recycling and substitution possible [40]. Their computer model predicted that if these were the only changes introduced into the world system, a global population crash would follow the rapid rise of pollution consequent on resource utilization. As the costs of uranium and nuclear-plant construction soar, perhaps we should feel reassured that nuclear-fission power has no chance of becoming cheap and abundant [41].

What is nuclear power really good for? Some supreme cynics might speculate that the international proliferation of nuclear power, and the atomic weapons consequent thereto, represent the ultimate technological "fix" for the population problem. Before

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they carry that notion any further, they would do well to sit down and write an EIS on it. They might discover that nuclear explosions and deliberate contamination incidents will typically be targeted at government centers and key companies, rather than at populations, resulting in general political and economic chaos, corruption, and demoralization — not the random life-shortening that might conceivably relieve overpopulation. Such cynics should also recognize that, through secrecy, the global inventory of atomic weapons will remain unquantifiable. Thus, if such devices are

ever used in a general war, there is a distinct possibility of global overdose. Fifty tons of plutonium and related fission products, if released as fallout in an unrestrained nuclear war, would contaminate the entire Northern Hemisphere to dangerous levels [42]. In the 30,000 American fission and fusion weapons, there exist at least 165 tons of plutonium [43]. Each nuclear power plant annually produces a ton of waste radionuclides, most of which are more radiotoxic than plutonium due to their shorter half-lives [44].

Do these facts indicate any threat

to environmental quality — and to property values, employment, public health, civil liberties, social order, law enforcement, and national security? As conservationists measure the importance of their environmental goals and set priorities for a livable future, they will answer the question resoundingly and decisively: "Yes!"

SCB

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## NOTES

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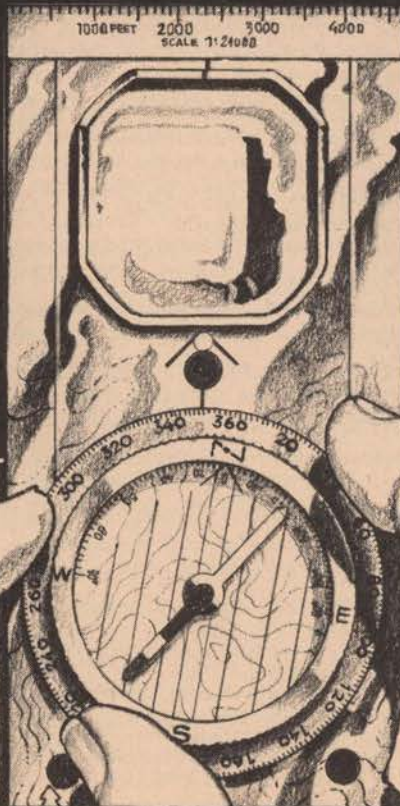
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AS CHRISTMAS APPROACHES, it might be good for many of us, once again, to remind ourselves and others that, even without gasoline lines, we still face an everyday crisis both in energy supply *and* in energy use. The holiday season, with its festive decorations, parties, and gift giving, provides an excellent opportunity for us to approach the traditions in an energy-saving way.

One very real value of considering energy use, especially at Christmas time, is that we — and our friends — could begin the new year with a slightly more efficient collection of belongings that would require less energy to maintain the same comforts as we enjoyed in the last year. Thus, we can discover for ourselves and show others, too, that the energy crisis need not mean doing *without*, only doing *better*. And as we examine our traditional gift-giving practices, we might also ask ourselves whether in this age of shortages we can afford the luxury of gifts that are merely symbolic, without being, in addition, necessary and useful.

Since nearly everything we spend our income on requires energy — either only in its manufacture or, in addition, in its use — our goal is not to stop spending, but to spend on those items that require on the average significantly less energy (and to avoid spending on those items that require significantly more energy) than the average amount of energy consumed for every dollar we spend.

In our Christmas giving, we should

*Lee Schipper is an energy specialist, working at the Energy and Resources Group, University of California, Berkeley. The article above was taken from his report "Holidays, Gifts and the Energy Crisis," UCID-3707.*

think of gifts the recipients may enjoy at home, without using their cars, or that allow them to make items by hand, or keep them occupied without using appliances. Some typical examples include models and other kits, sewing or knitting materials, games and indoor sports that use no power; plants seeds, garden tools and garden furniture; antiques such as wind-up clocks, things to "putter around" or "fiddle" with; musical instruments and other items of artistic or decorative value, such as jewelry or paintings.

Some kinds of gifts can lead directly to energy savings: wool blankets and wool sweaters for winter, cool summer clothing, thermostat timers and fans; durable items which substitute for throwaways; bicycles and sports equipment that can be used in or near your community, ticket books for the local mass transit system; cloth shopping bags, shopping carts; a handmade coffee cup for the office (to replace the plastic or paper throw-away cups); and even wool socks, flannel pajamas and robes, bed socks, slippers or candles.

When giving such items as tickets to the opera, symphony, or performing shows, beware of those activities that require inefficient transportation — such as individual use of automobiles — and choose instead those out-of-home activities that can be reached by mass transit, or carpool, especially at nonrush hours. Giving several members of a family, or friends in the same community, membership in a local club, educational activity, or perhaps a lecture series concerned with energy use is a particularly good idea!

When selecting more traditional gifts, especially manufactured items,

look for durability, careful use of materials, handmade and artistic items, clothing and shoes of natural materials, wood and leather craft items, wood furniture and so forth. This does not mean there is anything "wrong" with metal or plastic furniture, but an energy conscious giver can find more quality for less energy. When choosing items in any given class, such as lamps, for instance, compare, when possible, the energy required to manufacture and to run the various makes and models. In addition, *remember that better quality means that the energy of manufacture will be stretched out over more years of use, since the item will be more efficient than a flimsy, competing product that won't last as long.*

In formulating Christmas plans, consumers should be aware of some of the options which are available to them. Basically we should all remember to plan our travel in the most efficient way, carpooling to and from parties, or riding trains or busses, if possible, where long-distance travel is intended. Last year, when gasoline was scarce, millions of people rediscovered the convenience and economy of trains and busses.

Remember, too, that homes should not be overheated, especially when many guests are present. When buying food and drink, remember that returnable bottles require less energy and more labor and cost less per beverage than throwaways. Local liquor stores usually have beer by the case in returnables. Cheese, too, is a very energy-saving food, requiring significantly less energy to produce than milk or beef for a given amount of protein!

And, while Christmas lighting does not account for an unbearably large

fraction of the total demand for electricity, it is symbolic of the waste that occurs when electricity is used ornamentally with no regard for efficiency. People who use Christmas lights should try to use them at times other than the peak power period (closely paralleling business hours) and should consider seriously whether the lights need be left on all night! Remember also that large numbers of indoor lights add heat, as well as

light, so adjust your furnace accordingly.

And last . . . there are always gifts available through the Sierra Club: memberships, books, or subscriptions to the *Bulletin*. Such gifts not only are valuable and informative and require less energy in maintenance than many other items, but the moneys accruing to the club aid it greatly in its own various conservation efforts. **SCB**

## ENERGY COST OF THINGS: Common and Uncommon

Figures in brackets give equivalent energy in gallons of gasoline

Car, Standard Size	123 million BTU (980 gallons)	(Uses about 130 million BTU/year)
Color TV \$400	20,000,000 BTU (160 gallons)	
Refrigerator, Average Size \$400	21,000,000 BTU (168.0 gallons)	
Men's Suit \$200	4,000,000 BTU (32.0 gallons)	} NOTE that \$200 suit requires as much energy as \$80 bicycle. However, bicycle replaces much energy use.
Bicycle \$80 average cost	4,000,000 BTU (32.0 gallons)	
<b>Three Sources of Protein</b>	<b>Energy required to produce 1 gram of protein</b>	
Fish	450 BTU	Beef is one of the most expensive sources of protein.
Cheese	475 BTU	
Meat	700 BTU	
Electric Can Opener	690,000 BTU (6 gallons)	Uses as much energy in 10 years as was needed for manufacture.
\$100 Worth of Food Consumed in the Average Home	4,100,000 BTU (33 gallons)	Average energy to prepare food is about half as much.
<b>Beverage Containers</b>	<b>Energy required per 12 ounce filling</b>	
Throwaway bottle	5800 BTU	Throwaway bottles are the worst and most expensive, recycled cans are better, but returnable bottles are cheaper, use less energy and create more employment than the other two. (Hannon, 1972, Herendeen, Private Communication).
Aluminum can		
No recycling	7800 BTU	
16% recycled (nat. avg.)	6800 BTU	
50% recycled	4900 BTU	
87.5% recycled	3000 BTU	
Returnable bottles		
5 returns	3800 BTU	
15 returns	1900 BTU	

Sources: Hannon & Sebald 1974, Hirst 1974, Hannon 1973, Herendeen & Hirst 1973.

A list of some common items with the full energy cost of manufacture given. We do not include the cost of retailing or servicing or repairs. While more expensive items generally require more energy, it is the items which require *more energy per dollar of cost* which we want to shy away from. Note: While automobiles consume about 13% of all the energy consumed directly in the USA, they account for another 8% of all energy consumed in manufacture, sales, repairs, road construction and maintenance, oil refining, and building of structures like parking lots. In dollars, energy and jobs, the US economy is extremely dependent upon the automobile.

## CLUB SEEKS RESEARCH DIRECTOR

The Sierra Club is seeking an environmental scientist, planner, or administrator with diversified abilities and experience to head its research program. Qualifications include an advanced degree (preferably a Ph.D.), experience as research investigator and coordinator, ability to communicate technical issues to lay organizations, and knowledge of grant and contract administration. Working out of San Francisco, the successful candidate will oversee and coordinate research analyses for the club, the Sierra Club Legal Defense Fund, and other public interest groups, government, and private industry. Preference will be given to candidates with diverse background in disciplines such as earth sciences, physics, geography, environmental science and resource management. Interested individuals should send resumes to: Sierra Club, Executive Director, Mills Tower, 220 Bush Street, San Francisco, CA 94104.

## ANNUAL ELECTION

The annual election for directors of the Sierra Club will be held on April 10, 1976. The Nominating Committee has presented to the Board of Directors the following eight names for the five positions to be filled: Abigail Avery, Marvin Baker, David Bedan, Kent Gill, William Ginsberg, Mark Ganopole Hickok, Leslie Reid, Edgar Wayburn.

Members of the Club may add to this slate of candidates by petition. The requirements for such petitions are: (1) a petition for nomination shall be directed to the Nominating Committee, Sierra Club, 1050 Mills Tower, San Francisco CA 94104; (2) each petition must be signed by at least 411 members in good standing (one percent of the ballots cast in the last election) and shall also show the petition signer's printed name, address and membership number; (3) petitions must be received at the Club office by December 31, 1975; (4) a letter of consent, signed by the proposed candidate, must also be sent to the Nominating Committee.

# Water Over the Bridge— Dollars and Sense on the Floodplain

## STAFF REPORT

**N**OTHING IS SO CERTAIN as death and taxes, unless it's floods. They are a natural part of all river ecosystems, a product of the cycles of the weather and the physics of water moving over the surface of the earth. Rivers have channels that contain the normal flow most of the time, but regularly, if not predictably, every river spills over its banks and inundates the adjacent bottomlands. If fields and forests occupy the bottomlands, the flood can be a very positive event in that it replenishes the soil. If dwellings, stores, and factories occupy the floodplain, damage can be severe.

Men have had considerable trouble comprehending and adjusting to these facts. Since 1936, despite the construction of \$9-billion worth of taxpayer-financed "flood-control" projects, annual losses from floods have escalated to \$1.5 billion nationally. Federal disaster relief for floods has cost an additional \$4 billion since 1964. Flood relief counts for *ninety percent* of all national disaster relief.

Rather than reducing flood damage, the dams, channelization projects, dikes, levees, and other structural measures typical of the old school of flood control have tended to lure even more development into the floodplain. Structural solutions to flooding problems tend to create a false sense of security among those whom they would protect, even though such systems are often subject to structural failure, mechanical malfunction, gradual decrease in capacity, and numerous other problems. In fact, dikes and levee systems, by taking away the flood-water storage capacity of the floodplain, can actually increase the severity of floods.

Besides frequently being ineffective, structural solutions to flooding

usually have detrimental ecological impacts. They interfere with the normal cycles of renewal of bottomland soils. They can affect the biological productivity of estuaries at the mouth of a river. They frequently involve the destruction of wetland wildlife habitat.

There is an alternative, nonstructural approach to flood protection that avoids damage by anticipating the flood and planning land uses so as to avoid the more hazardous areas. To enforce such wise land use, however, is difficult. The primary implements available to induce landowners to avoid trouble are local zoning and building codes. The danger of flooding too often seems remote, and the cost of avoiding trouble too expensive, so that mistakes are always being allowed. The net result has been a counterproductive cycle of unwise use of the floodplains, reliance on disaster relief, the call for more structural flood control, and a lemming-like return to the floodplain. The U.S.

Water Resources Council has estimated that by the year 2020, unless management of floodplains is corrected, annual losses from floods will increase to \$5 billion. This figure, of course, does not include noneconomic losses that cannot be quantified.

The fiscal implications of this trend caused Congress, in 1968, to pass the National Flood Insurance Act. The program is a reciprocal arrangement between federal and local governments by which federally subsidized flood insurance becomes available to local citizens in communities that adopt and enforce minimum floodplain zoning and building-code restrictions on new construction in designated flood-hazard areas. The 1968 statute had a major flaw; it was voluntary. There was not sufficient incentive for communities to enter the program or for homeowners to purchase flood insurance because disaster assistance was almost always made available to rescue the community and the individual homeowners



Department of Housing and Urban Development

after the inevitable flood occurred.

For example, despite floods within the previous decade in Rapid City, South Dakota, only twenty-nine flood-insurance policies had been sold prior to the devastation of that community in 1972. In the Rapid City disaster, 236 people lost their lives and federal-disaster assistance totaled \$100 million. The year 1972 also brought tropical storm Agnes and devastating floods to Pennsylvania. In Wilkes-Barre, only two policies had been sold. Agnes cost the nation \$3.1 billion.

Clearly the law needed some teeth. Congress responded by passing the Flood Disaster Protection Act of 1973, expanding the available limits of flood insurance and imposing two new requirements: First, property owners who live in communities where flood insurance is sold must purchase the insurance to be eligible for any new or additional federal or federally related financial assistance for any buildings located in identified flood-hazard areas. (Thus, flood insurance became a prerequisite to getting not only disaster relief, but federally guaranteed mortgage financing as well.) Second, all identified flood-prone communities were given until July 1, 1975, or until one year after the publication of their flood-hazard maps, whichever is later, to participate in the program before the prohibition of federal financial assistance in the floodplain becomes effective.

For a community to enter the program has been made quite easy. The

floodplain-management aspects of the program are graduated into phases. A community adopts and enforces local measures sequentially as the Federal Insurance Administration (FIA) provides increasingly detailed information regarding the hazards. The first step after receipt of the hazard map requires that the community assure that any new construction is reasonably free from flooding, that proper drainage is provided, and that flood-resistant construction materials are used. The community also indicates its intention to proceed further in the program.

Congress has mandated that each of the nation's 22,000 flood-prone communities is to receive a Flood Insurance Rate Map by 1983. This map is the product of a detailed engineering study that identifies all areas within the community that have at least a one-percent chance of being flooded in any given year. The map also identifies the floodway, that part of the floodplain that carries the main flow. Within this "hundred-year-floodplain," all new construction must be elevated or floodproofed to the level of the base flood. Additional, more stringent standards are required within the floodway or in coastal high-hazard areas. The requirements also apply to structural repairs if costs exceed half of the pre-damage market value of the structure. There is also a provision that allows FIA to "buy out" substantially or frequently damaged buildings.

Thus far, over 12,000 flood-prone communities are participating in the program. These communities include 90 percent or more of the 6.4 million structures currently occupying the nation's floodplains. A recent sign of progress was that eighty percent of the structures damaged by tropical storm Eloise were covered by the program.

Some local jurisdictions have actually adopted floodplain management measures that exceed FIA's minimum standards. The FIA asserts that its standards will eventually assure that whatever new construction may be permitted by a local community will be safe from the hundred-year flood and that virtually no construction will be permitted in coastal high-hazard areas or inland floodway areas.

As one would expect, the fact that

the Federal Flood Insurance Program now has teeth has caused some interests to oppose the program. In a series of amendments championed last spring by Senator Thomas Eagleton of Missouri, critics of the program proposed to allow individuals in communities not in the program to purchase the federally subsidized flood insurance and to prevent banks from withholding mortgage money for development in flood-hazard areas of communities that had not embraced the land-use controls of the program. In effect, these amendments would make the program voluntary once again and remove the incentive for enforcing the land-use controls essential to preventing flood damage. Fortunately, this attack was beaten back, but similar ones will almost certainly reappear.

The program is not without its flaws. Many of the early flood-hazard maps were very inadequate, but the regulations allow for correction and improvement of the maps. The task of performing the rate-map studies is moving far too slowly; only 600 communities have been completed. In addition, the minimum regulations do not ban development in the floodplain or in high-hazard areas; they merely impose conditions. This is so because of the constitutional limits inherent in land-use control by local zoning.

If America's long-time trend toward increasing floodplain occupancy is to be reversed, then advocates of this reversal must make themselves heard, especially at the local level. Control of specific land uses and design specifications for new construction remain within the authority of local government. However, the National Flood Insurance Program, with its incentives and requirements, signals a reevaluation of national policy for the floodplains. The long-range benefits of such efforts will be more harmonious use of flood-prone lands, roughly ten percent of all land in the United States, and less environmental degradation than from old-fashioned flood-control structures. The 1968 act, as amended in 1973, represents, at long last, a national realization that it makes more sense to keep the people away from the floods than to attempt the impossible task of keeping the floods away from the people. **SCB**



WASHINGTON REPORT

Brock Evans

Backlash? What Backlash?

AS THE NATION'S economic dol-drums continue and as energy becomes increasingly expensive, talk of "environmental backlash" is still fashionable in some circles in Washington. The term first began to surface in 1971, in the aftermath of the "Earthday" enthusiasm, but it really came into vogue about the time of the Arab oil embargo of 1973, when it became a popular speculation in the media. It also became popular with some members of Congress and the administration, mostly those who had always been opposed to environmental controls. They seemed to feel that by talking about the so-called backlash long enough, it might come to pass.

Despite all the rhetoric, the backlash has never materialized. The first major assault on environmental laws came in the spring of 1972, when the electric utilities tried without success to get the Atomic Energy Commission exempted from the requirements of the National Environmental Policy Act (NEPA). The most bruising battle, however, was over the Alaska pipeline in 1973, but even then, the Senate vote on the crucial issue — whether to override NEPA — was split right down the middle, this, after an eighteen-month media campaign by the oil industry. During the dark winter of that year, as gas lines grew longer and longer, observers and the media felt that surely now, at last, the oft-predicted backlash would come to pass. True, a strong effort was made to weaken the Clean Air Act, but once again, the American people responded with mail and telegrams protesting any such effort. When all the smoke had cleared, the Clean Air Act remained almost completely intact.

More recently, those members of Congress who wish the backlash would hurry and catch up with them are fond of citing the failure of Congress to override the President's veto of the strip-mine bill as an example of an environmental defeat. Although we did fail by three votes to override the veto, environmental values were supported by sixty-six percent of the members of Congress. In addition, during mark-up sessions in the House and Senate committees charged with preparing legislation for a renewal of the Clean Air Act, opponents of the act have attacked it severely, but so far it has survived the onslaught. It now looks as if the revised

act will be stronger than ever before. Finally, early last summer, the highway lobby and its supporters in the administration attempted to weaken NEPA by provisions that would permit the federal highway agency to delegate preparation of environmental impact statements to state and local agencies. While this attempt would not have constituted a major weakening of the act, even it failed. The final bill, as passed, protected the basic concerns of environmentalists.

Thus, some people here are still looking over their shoulders and wondering where that environmental backlash really is — why it hasn't materialized. The answer perhaps can be found in the public opinion poll conducted by the highly respected Opinion Research Corporation in August, 1975. Entitled "Public Attitudes Towards Environmental Trade-Offs," the poll shows that there has been no environmental backlash at all. As the introduction to the poll states, "Even during a time of recession, high unemployment, and rising fuel costs, the public does not voice a readiness to cut back on environmental-control programs to solve economic and energy problems."

When asked whether they would rather pay higher prices to protect the environment, or pay lower prices and have pollution, sixty percent of the people polled chose environmental protection; only twenty-one percent preferred lower prices and pollution.

Ninety percent of the people thought that if we don't start cleaning up the environment now, it will cost more money in the long run.

Forty-eight percent of the people said it is more important to have pollution-control devices than to keep car prices lower; thirty-eight percent disagreed.

The response to the question of whether it is more important to have strip-mining regulations or lower electric rates was closer, with forty-three percent in favor of the regulations and forty-one percent opposed.

The only question in which environmental values took a backseat to other social concerns was whether "cleaning the environment is more important even if it means closing down some old plants and causing some unemployment." What was surprising about the answer was not that there was a plurality in

favor of jobs, even at the cost of pollution, but that opinion was so closely divided: forty-three percent felt that cleaning the environment was more important; forty-four percent thought it was not. But in assessing even this answer, we should remember that the pollsters, in asking the question, did not really reveal how seldom this tough choice, in practice, needs to be made.

As the poll decisively shows, the efforts of the oil, electricity, utility, coal, automobile, and other industries to convince legislators and the public that environmental controls should be overridden in the name of cheaper energy and more jobs have not caught on. Environmentalism is still strong; its values still intact. The laws it has fought so hard for remain on the books. There will be ups and downs, but the message is plain: the American people are not about to tolerate destruction of the environment even when jobs and energy are at stake.

As Opinion Research said at the end of its poll:

The opinions of people at all levels of society indicate that environmental protection has become a relentless, institutionalized, mass movement with the potential to change the future course of industrial history. Equally important, current economic problems facing the nation, despite their distressing effect on so many segments of the population, do not seem to have dispelled the public's basic desire for permanent pollution controls. All together, business seems to have little choice but to adapt to and attempt to capitalize on the long term implications of the environmental protection movement.

We agree, and that is why we are here — and why the backlash is not. **SCB**

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EDITORIAL

Paul Swatek

A Ten-Most-Wanted List

THE SIERRA CLUB should have a "Ten-Most-Wanted" List. It would contain the names of the ten wild areas that the club wants most to protect. It would establish clear objectives on which members throughout the club could focus.

The board of directors and the Sierra Club Council have spent a considerable amount of time in the past year discussing how the club can better establish priorities. Greatest progress has been made in the area of congressional lobbying, where the board has set three top priorities — land use, energy, and pollution. Within these three broad areas, the board and staff have identified twenty bills or areas of congressional activity that merit priority attention. Most of these deal with broad environmental objectives, such as energy conservation, establishment of an organic act for the Bureau of Land Management, defense of the Clean Air Act, and reformation of federal mining laws. The list of legislative priorities was established using a rating system by which various candidates for consideration were evaluated in terms of nineteen criteria — such as importance to policy goals; value as precedent; usefulness for educational, political, public-relations, and fund-raising goals; availability of manpower and expertise; cost; ripeness of the issue; strength of the opposition; opportunity for coalition; and attitude of the decision maker.

Seven of the items on the legislative priority list fall into a category that one could call "area preservation." In fact, the top score assigned to any issue evaluated last year went to preservation of national-interest lands in Alaska. It was closely followed by addition of Mineral King to Sequoia National Park, additions to the Wilderness System, expansion of Redwood National Park, protection of Hells Canyon, and establishment of new national parks to protect the Congaree Swamp and the tall-grass prairie.

In the past few years, the club has established ten regional conservation committees to which has been delegated the primary responsibility for implementing club policies, as established by the board. In turn, the board has tried to focus its attention on the broad environmental issues and has, to cite a few examples, laid out comprehensive energy and land-use policy statements, and has revised the club's wildlife policy. It is now in the process of articulating a policy on agriculture and is taking an initial look at the facets of a comprehensive transportation policy. To assist in these efforts to formulate broad policy positions, the board has established national committees devoted to particular conservation issues. Considerable effort has gone into finding club volunteers who can help on these big, national environmental issues.

In effect, the board has delegated area-preservation work to the regions without doing a lot to maintain a national overview on this traditional area of club effort. By establishing a Ten-Most-Wanted List, the board could define more clearly a role for the national club in area preservation. It could guarantee national visibility for the "most wanted" areas through priority attention in our publications, litigation, lobbying, and public-affairs activities. Special attempts would be made to coordinate our efforts and develop more effective strategies to achieve these top objectives.

The same attempt to set priorities that the board is engaged in also occurs at regional and chapter levels. It would therefore be entirely appropriate if the club would establish regional, and perhaps chapter, "most wanted lists." One would expect these lists to feed "candidate" areas to the national list. There should be no problem uncovering new areas we want to protect.

The club has tapped into an enormous pool of human energy by being responsive to individual member's willingness to work on issues of strong personal interest. At the same time, this responsiveness has a tendency constantly to enlarge the club's agenda and dissipate its energies. Therefore, we must set priorities. In this way we can define manageable roles for the various entities within the club in the matter of area preservation, and wage and win more of the traditional, nationally visible battles that are so great for building momentum and morale.

SCB

## REGIONAL REPS REPORTS

### Southern California: Death Valley's Open-pit "Prospectors"

TENNECO CORPORATION likes to advertise that it is "into" many things — oil and gas, paint and packaging, agriculture, land, and machines. Tenneco is also into Death Valley. Since 1971, the company has been strip mining in the general area between Zabriskie Point and Dante's View. The larger of its two pits is 200 feet deep, 600 feet wide, and 3,000 feet long, not counting the land being covered by mountains of debris and ever-widening fans of waste. The smaller pit is only about six months old, but large enough to dwarf the bulldozers and ore trucks. From the air, the strip mines look much smaller, flatter and less innocuous, but even so, they still dominate the view.

Tenneco, of course, is not the only modern miner, or rather, mining corporation, stripping away Death Valley. All together, there are more than 1,800 mining claims within the monument. Thus far, miners have built 300 to 400 miles of roads in Death Valley. Each year, they file about 200 new claims, and about 1,200 additional acres of the monument are scarred by their activities. In the southern end, Pfizer, Inc. and the Johns Manville Corporation are busy stripping away the earth for talc, while nearby, Cypress Mines, one of the largest mining companies in the world, is cutting down a mountain for the same mineral. But it is borates, not talc, that Tenneco is after, and its search has led the company in recent months to stake extensive claims in Gower Gulch, one of the most beautiful parts in the monument, an area viewed from Zabriskie Point by most of Death Valley's 700,000 annual visitors. These recent claims by Tenneco prompted the National Park Service to request that the Secretary of the Interior close the area to mining "In order to protect one of Death Valley's . . . most spectacular scenic and recreational areas. . . ." In response, the U.S. Solicitor General's office issued the opinion that the Secretary of the Interior could withdraw areas in the national monument from mining only for the purpose of accommodating public facilities or protecting historical and paleontological sites, but not for scenic preservation. Only through congressional action, the opinion maintained, can Death Valley be protected.

It was through congressional action that the monument was opened to mining in the first place, a move that came only months after Death Valley was added to the national park system in 1933. At that time, of course, the miner was usually a lone prospector with his burro. Congress reasoned that "It would be unfortunate if the prospector, who has been responsible for building up the romance and mystery of Death Valley, were not allowed to prospect and operate in the future as he has done in the past."

By 1971, however, the corporate strip miner had replaced the prospector, and subsequent attempts by the park service to protect the area through wilderness classification and closure to mining have so far been unsuccessful. Then, in September of this year, the story and pictures of the destruction in Death Valley finally caught the media's attention, and

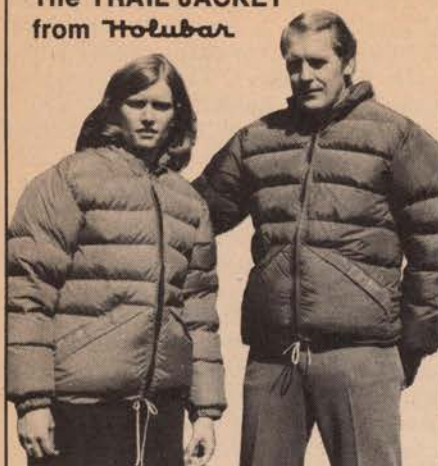
the public responded with outrage and indignation. As a result, several bills addressing the problem were introduced in Congress. The first bill, by Congressman John Seiberling of Ohio, would close Death Valley, Organ Pipe Cactus, and Glacier Bay national monuments, Mount McKinley National Park, and Coronado International Memorial to further mineral entry, but would allow the development of existing mining claims. The senate bill, cosponsored by Senators Metcalf of Montana, Jackson of Washington, Johnston of Louisiana, Hatfield of Oregon, and Cranston and Tunney of California, would not only close national park units now open to mineral entry, but also would call for a three-year moratorium on surface mining on existing claims to allow Congress time to resolve the issue. Finally, Congressman Morris Udall of Arizona reintroduced his bill from the last session of Congress that would not only close all park-system units to mining, but would require the federal government to take unto itself all mineral rights in the national parks and monuments. Hearings on these bills have begun, and their fate will certainly be determined, in large measure, by how loudly the public supports withdrawal of mining from the national parks.

Mary Ann Eriksen



Mary Ann Eriksen

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**Northwest: Montana Wilderness**

IT IS WELL to remind ourselves, in our efforts to preserve America's wilderness resources, of the important part Congress must play in this task. While field studies and cooperation with the land-managing agencies are important, the ultimate decisions lie with Congress. Nowhere is this more true than in the effort to protect areas of de facto wilderness in the national forests. The current status of de facto wilderness in Montana, and of citizens' efforts to protect it, offers a case in point.

The 1972 Forest Service Roadless Area Review and Evaluation (RARE) program did result in selection of some important de facto wilderness areas for formal study, but a great many roadless areas were not selected, and still are not receiving fair and balanced evaluation for their wilderness values. The promise of the Forest Service (nudged by our Sierra Club v. Butz lawsuit) was that such roadless areas would receive further consideration for wilderness through the agency's land-use-planning process, but, in practice, the wilderness option for these areas is often not being fairly considered.

In Montana, the Forest Service did select thirty-seven new wilderness study areas through the RARE program, amounting to some 1.5 million acres. That is commendable, of course, but many of these areas were obvious candidates and were likely to receive study in any case. Furthermore, 183 other roadless areas remained unselected in Montana, totaling more than 3.5 million acres. This is the de facto wilderness which remains in imminent jeopardy.

As they followed the land-use-planning process, Montana conservationists discovered that these roadless areas were not receiving fair evaluation as wilderness. As rapidly as plans could be finished, the areas were being opened to development, road building, and timber cutting. In one case, a large and important de facto wilderness area in the Sapphire Mountains near Missoula was arbitrarily subdivided into six distinct roadless areas. Thus, the total wilderness opportunity was systematically ignored in planning. Piecemeal decisions are being made to start cutting in one portion after another. Only the filing of a formal administrative appeal has protected the proposed "Sapphire Wilderness Study Area."

Another example is the Mt. Henry roadless area in far northwest Montana, a small area, but one of unusual diver-

sity. This area was included in a Forest Service planning unit that also encompassed two other distinct roadless areas. As soon as the plan was completed, two huge timber sales were proposed in the heart of the Mt. Henry area. Here, too, the planning was faulty. Throughout the planning process, no alternative was considered which did not contemplate these two timber sales. No wilderness alternate had been considered at all.

Here again, only our appeal stopped the timber sales. Caught without a wilderness alternative, the Forest Service recycled their land-use plan and environmental impact statement and added a so-called wilderness alternative — but this time they lumped all three roadless areas together into an all-or-nothing alternative. The individual merits of the Mt. Henry roadless area continued to be ignored.

Given this kind of skewed and unbalanced "planning," citizens have found it often impossible to put confidence in the land-use-planning decisions being made by the Forest Service. Rather, as the wilderness is being whittled away, they have turned to Congress for help.

Realizing that key de facto wilderness areas were simply not going to survive Forest Service planning, Montana conservation leaders secured the support of senators Lee Metcalf and Mike Mansfield, who sponsored the "Montana Wilderness Study Act of 1975," S. 393.

**ERRATUM**

In the October issue, the name of Edgar Wayburn was inadvertently omitted as an author of the article "The Short, Sorry History of Redwood National Park." Our apologies. — Editor

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This bill would mandate formal wilderness study for nine key de facto wilderness areas (nearly one million acres) that the Forest Service has ignored, and it would assure their protection until the study is completed. Finally, Congress would decide which of the areas should receive wilderness protection.

Neither the Forest Service nor the timber industry likes this legislation, as they made clear at Senate Interior Committee hearings in May. Allegations that the proposal would have a substantial adverse effect on the timber industry have not been substantiated. A new, independent study by the University of Montana School of Forestry has shown that the enactment would have no adverse effects on timber supply or the Montana economy. The Forest Service fears this bill would set a precedent. It would. But it is a sound precedent, for it simply involves the right of citizens to appeal to the Congress when they can't obtain a fair hearing from an agency.

Many other potential wilderness areas

around the country may run into similar problems. Area by area, Forest Service decisions cannot be assumed to be correct in every instance, so it is appropriate that Congress exercise its powers to review this program, and to step in to order a proper wilderness study where a sound case for the importance of the area can be made.

The Montana Wilderness Study Act offers an important example, one which will need to be applied in other states, if the de facto wilderness of the national forests is not, as Robert Marshall lamented in 1937, to melt away like the last snowbank on a hot afternoon in June.

In view of the national significance of the Montana Wilderness Study Act, interested citizens may want to write to Senator Metcalf (Senate Office Building, Washington, D.C.) for a copy of S. 393. Expressions of support for this approach, which reinforces the integrity of the wilderness act, should also be made to your own senators and congressmen.

Douglas Scott

## International: Report from Zaire and the IUCN

**T**WO WEEKS IN A COUNTRY can leave you only with impressions, fleeting glimpses into the life of a people, what they are striving for, what their country looks like. In Zaire (formerly The Congo), you are immediately impressed with the size and diversity of the country. The changes from one side of the nation to the other, in terms of language, tribal customs, and differences in national wealth are striking. Zaire, like most new nations, hovers somewhere between the traditional culture and technology of its tribal past and an indeterminate future in the contemporary industrial world. At the airport in Kinshasa, the capital of the country, modern jets line up on the airstrip, but at N'Sele, the special government conference center outside the city, where the general assembly of the International Union of the Conservation of Nature and Natural Resources (IUCN) was convened, there were endless delays over simple procedures because of the lack of trained personnel and equipment.

Kinshasa is especially memorable for its grey, sterile, sandy soil, the color of which is mimicked by the grey huts and, at this time of year (just before the rainy season), by the grey sky, which is filled with the smoke of brush fires that creep through the fields of grass. Yet as you move across the country, the grey soil

gives way to dark, rich soils that support tea and coffee plantations, steep-terraced farming that in many areas has cleared the tropical forest in search of productive soil. Here, the houses are made of chocolate-brown mud bricks and have grass roofs.

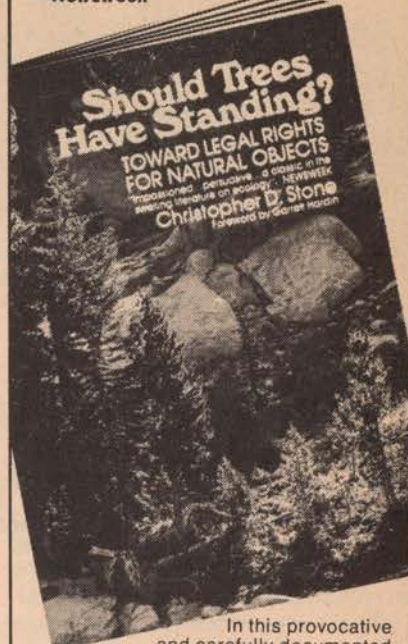
During my two-week visit in Zaire, one of the most vivid impressions was of the government's commitment to the preservation of the country's natural heritage. Although the national parks were originally set aside by Belgian colonials fifty years ago, they have become a focal point for national pride and unity. They have become part of the culture of the new nation. President Mobutu's own words best express the determination to preserve this heritage: "For us, there is no culture without nature, and anyone who destroys nature alienates himself."

The contrasts between the harsh life in the human settlements and the spectacular beauty of the natural areas were discussed at both the general assembly and technical meetings of the IUCN, an international association of governmental and nongovernmental organizations concerned with conservation. The theme of the conference, "Conservation for Decision-makers," was itself meant to focus on how countries could integrate conservation values with the needs of their peoples. As we listened each day to

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Lee Talbot, Senior Science Advisor, Council on Environmental Quality (left); E.U. Curtis (Buff) Boblen, Deputy Assistant Secretary for Fish, Wildlife, and Parks, U.S. Department of the Interior (right).

papers dealing with the protection of natural areas in the context of population pressures, land use, and economic development, I was struck by the grim fact that too often the conservationist seems to walk along a track separate from the people in developing countries, whose lives are directly affected by conservation decisions. Environmentalists talk of long-term planning when most of Africa faces basic and immediate problems. It is hard to look ahead if you do not even have the means to preserve what you have right now. We talked of guiding principles for conservation of tropical rainforests because we worried about the long-term deleterious effects on, for example, the watershed. But the Africans, at the same time, are almost totally reliant on wood for fuel. This is a staggering reality: of the total amount of wood cut in the entire world, at least fifty-two percent is used for fuel! In developing countries, the figure rises to eighty-two percent. Unless there is an alternative, can we really expect the pressure on the tropi-

cal forests to diminish? The need for fuel is only one of the pressures on this important ecosystem.

Rapidly increasing populations, to satisfy their need for more agricultural land, put pressure on the forest areas. We can propose ways to reduce population, but until the people already living are guaranteed another means of sustenance, until the women are able to earn money instead of only produce the children that are a family's security for old age, we can expect little progress in this area.

Discussions at the IUCN meeting about the preservation of national parks in Africa were continually concerned with social, cultural, and economic issues. Conservationists have typically viewed national parks as separate entities that must be insulated from most human activities — this, largely a result of the American experience — but the Africans at the meeting pointed out that parks in their countries can survive only if the needs of the people living in and near them are accommodated. As it is now, outside experts are brought in to solve park problems when much more could be accomplished if local people were trained for the job, the very people who are most immediately affected by park decisions. Many speakers urged the IUCN to provide the practical tools and training that would make such a program possible. Some delegates suggested regional seminars where officials could benefit from exchanges of ideas and methods used in similar areas of neighboring countries.

For some people, the very words, "national park," suggest a luxury in a continent striving at this point merely to feed and shelter its peoples. When one understands, for example, that coastal ecosystems must be protected for food resources and species diversity alone, it seems ludicrous to call such reserves "parks," which connotes a leisure-time

playground. While recreation should not be overlooked as a reason to set aside natural preserves, perhaps a better term is needed to emphasize the special importance of such areas in countries hard pressed to assure their peoples of survival.

Within the context of the technical meetings of the IUCN, which sought answers to conservation in the developing world, was the desire of the membership to make the next three-year program of the organization reflect new approaches. The outcome of countless meetings and open discussions during the two-week conference is a new program and budget designed to emphasize conservation with a framework of wise land use. Conservation of species and ecosystems will be the primary focus, with mankind considered as part of those systems. The program assures the opportunity for more action at the regional and national levels by the staff and membership of the IUCN. National committees of member organizations are being encouraged, and the special commissions will be given greater responsibility in decisions on projects.

Among the actions taken at the general assembly was a resolution calling on governments and international organizations to draft a "Charter of Nature." Other resolutions were devoted to ensuring the protection of marine habitats, especially coastal areas; protection of traditional ways of life of indigenous peoples; conservation of tropical forests through the proper environmental assessment of proposed exploitation projects; restoration of semi-arid environments and wildlife; and protection of endangered species. A resolution urging conservation of energy declared that governments should "exercise restraint in any further development of energy generation from nuclear fission."

There will be a new administration for IUCN as a result of the decision by Director-General Dr. Gerardo Budowski not to stand for re-election. During the six years of his leadership, the IUCN has grown to a membership of almost 400 governmental and nongovernmental organizations. Through the conservation projects carried out in all parts of the world under his direction, the reputation of IUCN has grown so that it is now a force to be reckoned with in the development decisions that are made by many countries and organizations.

Patricia Scharlin Rambach

The author is International Program Officer for the Sierra Club, and its delegate to the twelfth general assembly of the IUCN. The club has been a member of the IUCN for many years.

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# TOX-IC!

(tŏk' sĭk), adj. . . . 1. Of or pertaining to toxin.  
2. Harmful, destructive, or deadly; poisonous.

## LEGISLATION TO CONTROL TOXIC SUBSTANCES

NANCY BUDER and LINDA BILLINGS

The following article is about poison—in the working place, the home, and the environment at large. It is about products that each of us uses every day, products that have already resulted in a significant incidence of disease and death. It is about Congress' repeated failure to pass legislation to assure that new substances are screened and tested for toxicity before they are introduced into the marketplace and from there into our homes. This article is not pleasant, but its subject is a matter of life and death. If, after reading this article, you agree that something must be done now to protect all of us from the vast array of toxic substances that contaminate our lives, take a few minutes to write your senators and representatives in Congress, urging them to support Senate Bill 776 and House Bill 7548, both of which would, for the first time, provide adequate controls on the introduction and use of hazardous chemicals.

**E**ACH HUMAN EPOCH revels in its singularity, proposing as unique virtues its responses to circumstance; as enlightenment, its own meager candle in the corridors of history. This is obvious enough in our own time in the pronouncements of politicians, the assurances of many scientists and engineers, and in the sloganeering of corporations and their ministers of marketing. Until the mid-sixties, when almost everything began to be called into question, most of us accepted, or at least put up with, such bromides. Progress *was* our most important product; modern chemistry *was* a miracle. In some ways, perhaps, it still is, yet increasingly we learn that yesterday's test-tube wonder has become today's Frankenstein monster. Radium, DDT, thalidomide, fluorocarbons, mercury, phosphates, asbestos, and various plastics, to name only the most notorious examples, are all former wonders now regarded with either skepticism or horror. In too many cases, the miracle has turned out to be a mixed blessing.

Each year, American industry introduces hundreds of new substances into the environment. We eat them, wear them, inhale them, wash in them, wrap things in them, keep things in them, and apply them to our bodies. Yet evidence accumulates each day that many of our most common domestic products are fabricated from poisons, that in our most routine and necessary acts we may be inadvertently poisoning ourselves, our environment, and our posterity. The Department of Health lists 13,000 chemicals as toxic substances. Of these, 1,300 are carcinogens (cancer causing), and about 1,000 are mutagens (substances believed to cause genetic mutation). Furthermore, the National Cancer Institute estimates that between sixty and ninety percent of all human cancers are caused by environmental factors.

### POLYVINYL CHLORIDE

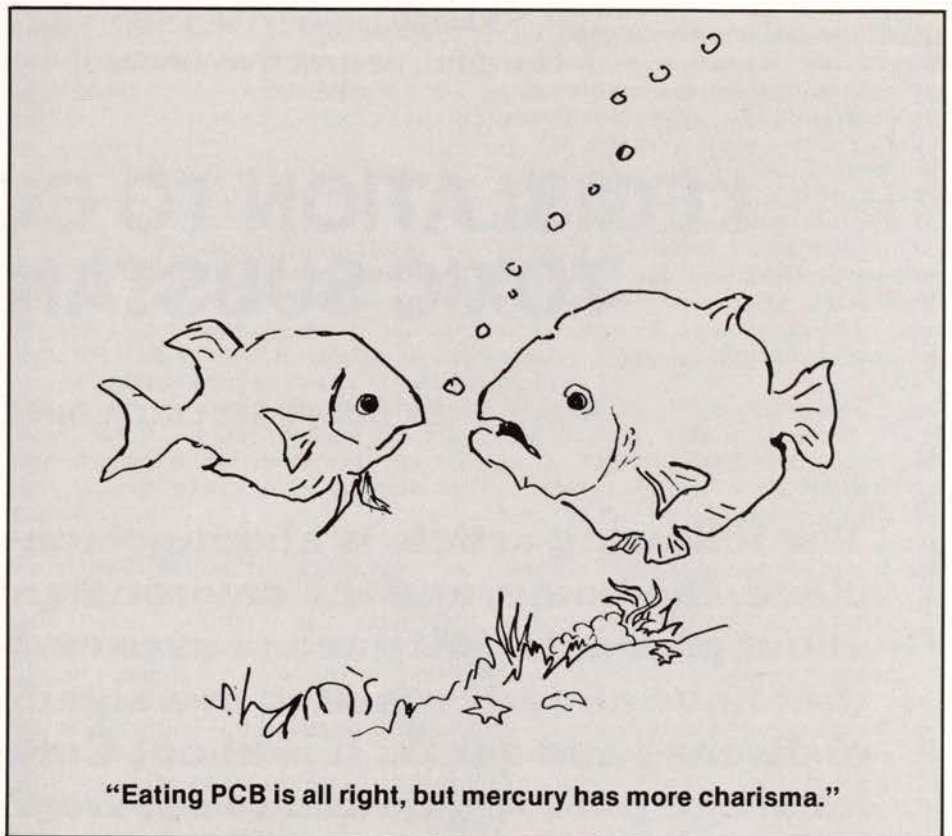
**O**NE COMMON substance known to be a carcinogen is polyvinyl chloride, or PVC, the most common plastic in use today, accounting for about half of all plastics. PVC is fashioned into a variety of products: food wrappers; plastic bags used in blood transfusions; water pipes; toys; dentures; phonograph records; furniture coverings; containers for oils, bever-

ages, shampoos, and other liquids; and a large variety of other common household items. Its manufacture is responsible for one percent of the gross national product.

Polyvinyl chloride is an enormous molecule comprising a chain of individual vinyl-chloride molecules. Hence the name: poly- (many) vinyl chloride. But when this chain is formed, not all the vinyl-chloride molecules are linked up; some float

have become victims of this inevitably fatal disease. Scientists estimate that each year only twenty new cases of this disease would normally occur throughout the entire United States, so that these nineteen cases among PVC workers alone are equivalent to an epidemic.

It has been known for twenty-five years that vinyl chloride is toxic to the liver. Today, we are learning the real extent of this toxicity by the



free, so to speak, in the structure of the PVC molecule. PVC plastics were not pretested for possible toxicity, and these randomly floating vinyl-chloride molecules were therefore not known to pose a health hazard. A few years ago, however, scientists were forced finally to study the substance.

Two years ago, Dr. John L. Creech, physician for the B. F. Goodrich chemical plant in Louisville, Kentucky, was disturbed by the large number of workers with serious liver ailments. Searching the work records, Dr. Creech discovered that in the previous five years, four employees had died from angiosarcoma of the liver, an extremely rare form of cancer. To date, nineteen workers in PVC plants

sharp rise in this rare form of liver cancer. Trying to pin down the causes of this disease is complicated by what scientists call its "twenty-year latency period." It is believed that the onset of symptoms comes twenty years after exposure to the carcinogen, a lag that makes precise determinations of cause and effect difficult. The problem is further complicated by the likelihood that cancer may not require prolonged exposure to the carcinogen, but may

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*Nancy Buder formerly served as the Sierra Club's consultant on solid-waste management; Linda Billings, one of our Washington representatives, has paid special attention to toxic-substances legislation.*

be triggered by even a single overdose.

Nor is angiosarcoma the only health problem associated with vinyl chloride. In 1973, researchers at Bonn University in Germany found extensive liver damage in nineteen out of twenty workers at a single PVC plant, damage that could be the first signs of approaching cancers. Tumors believed to be connected with PVC exposure have also been found in the brain and lungs. Osteolytic lesions, which are caused by constriction of blood vessels in the hands, have also been observed among PVC workers. These lesions typically lead to a loss of sensation in the hands and a shortening of the fingers. Another debilitating disease associated with PVC is "meat packer's asthma." Meat packers use PVC film to wrap cuts of meat. The plastic sheets are severed by a hot wire that decomposes the plastic, releasing vinyl-chloride fumes into the working environment. After inhaling these fumes, workers frequently have trouble breathing, sometimes leading to permanent disability.

The workplace is like the canary in the mine; it may be the best indicator of environmental cancers that later may affect the population at large. After all, the meat being wrapped is what we take home from the supermarket, and angiosarcoma has not been limited to PVC workers. In upstate New York, three deaths caused by the disease did not involve occupational exposure to vinyl-chloride molecules. The three victims lived near a vinyl-chloride plant; their deaths were attributed to breathing the local air, which contained vinyl-chloride gas from the factory.

Genetic mutations have also been traced to polyvinyl chloride. Dr. Cesare Maltoni of Bologna, Italy, has shown that pregnant rats exposed to PVC will spontaneously produce offspring with angiosarcoma. Studies in the United States indicate an increased rate of birth malformations among human infants born in areas where PVC plants are located.

The consumer has great difficulty avoiding PVC products. In the United States alone, 150 million pounds of vinyl film are used in packaging meat and fresh produce, 55 million pounds are made into bottles to contain oils and medicines, and 200 million pounds are used as lining and lid gaskets for metal and glass food containers. PVC is also used to package

various cosmetics. It is virtually impossible for the average consumer to distinguish PVC containers from those made from other plastics or to detect whether any vinyl chloride has leached into the product inside the containers. Many products in daily use contain far more vinyl chloride than the one part per million (ppm) recommended as an acceptable level for even the working environment.



Alcoholic beverages are especially susceptible to the migration of vinyl-chloride molecules from containers. Studies have shown the alcohol in PVC bottles could contain up to twenty ppm of vinyl chloride. Because of these high concentrations, the Food and Drug Administration (FDA) has banned PVC liquor bottles because it "knows no studies which establish a safe level of consumption when this monomer [vinyl chloride] is leached from containers into alcoholic foods."

Vegetable oils have been found with concentrations of vinyl chloride up to 6.5 ppm, and cider vinegar in PVC bottles has reached levels of 8.4 ppm. According to the American Meat Institute, vinyl-chloride concentrations in foodstuffs wrapped in PVC film are around four ppm. Many cosmetics, including almost all shampoos, resemble alcohol and fatty foods in their affinity for vinyl-chloride molecules. Hair tonic, for example, can contain four ppm and mouthwash nine ppm.

Vinyl chloride can also leach into water from storage bottles and PVC water pipes. Water stored in plastic bottles for three months showed .03 ppm; and after twelve months, .11 ppm, according to an industry study. Water stored in PVC pipes for three days contained .023 to .036 ppm of vinyl chloride, and thereafter showed indefinite increases.

As a result of such figures, the FDA recently extended its ban on PVC containers to include all rigid food pack-

aging. This ruling prohibits PVC from being used in containers for such items as salad dressings and vegetable oils. The FDA will continue, however, to allow fresh meat and produce to be wrapped in PVC film. Previously, the FDA banned the use of vinyl-chloride gas as an aerosol propellant, which use could have resulted in 250 ppm of PVC in a single spray.

Pharmaceutical houses and hospitals often use PVC products—containers, syringes, tubing, and many others. At first, the medical profession enthusiastically welcomed PVC products because their low prices permitted one-time use and disposal, thus eliminating the need to sterilize equipment, and minimizing the risk of passing infections among patients. But one study indicated symptoms of acute liver ailment among patients receiving weekly hemodialysis with PVC equipment. The symptoms stopped immediately when the PVC material was eliminated from the treatment procedure.

PVC surrounds us, and we are constantly being exposed to vinyl-chloride gas. Passengers in a warm car are inhaling vinyl chloride whenever they can smell the plastic seatcovers. A week-old infant is likely to suck a vinyl pacifier or receive its formula

*Continued on page 30*



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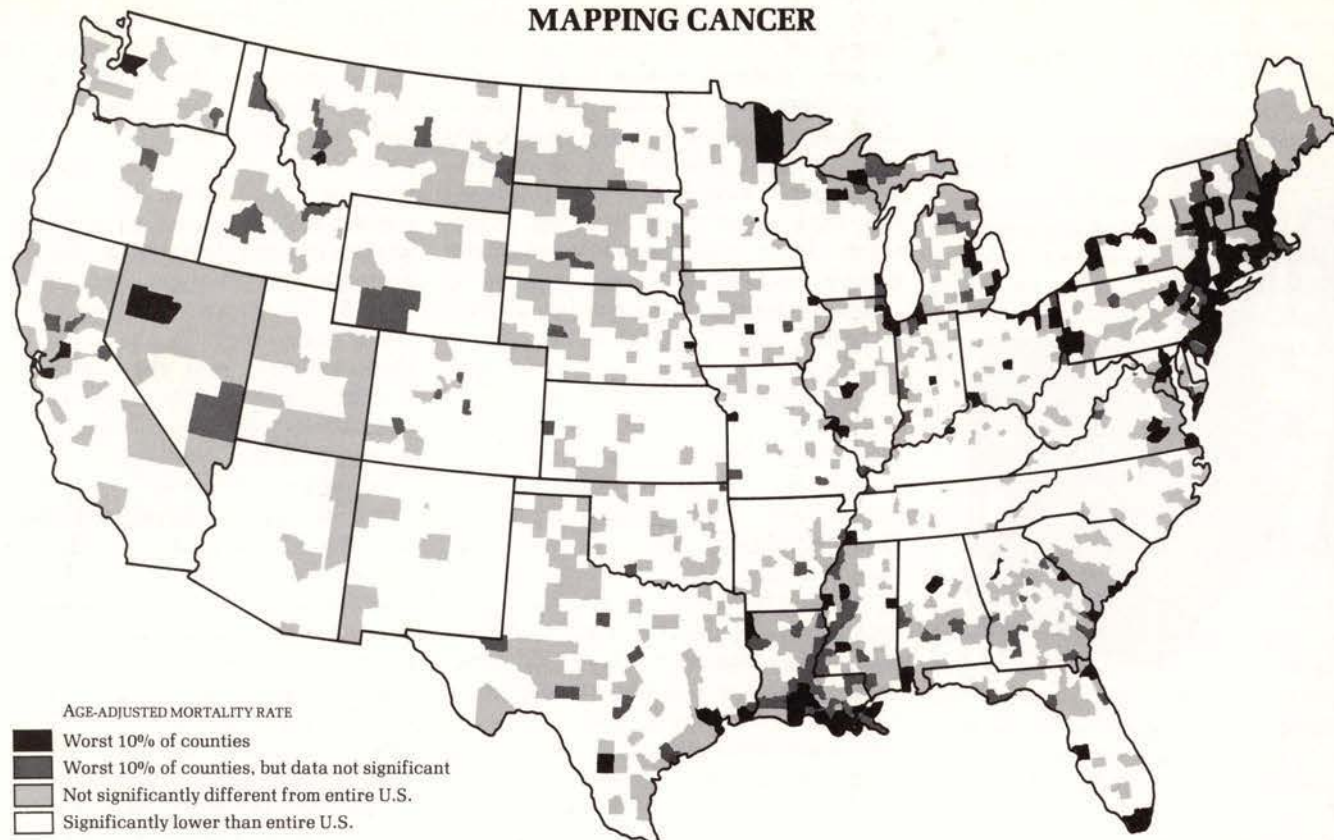


## POLY- CHLORINATED BIPHENYLS

Polychlorinated biphenyls (PCBs) offer a particularly revealing case study of the effects of untested new chemicals that become widely used and dispersed with unfortunate consequences to humans and their environment. PCBs are a highly toxic and persistent class of synthetic chemicals that are similar in structure to DDT. Their stability and fire-retardant properties make them very desirable for a wide variety of uses, including plasticizers, textile coatings, paints, flameproofing, carbonless "carbon" paper, and impregnants in transformers and power capacitors. Widely used for more than forty years, PCBs have been increasingly restricted as their toxic properties have become better known. Monsanto Chemical Company, the sole producer of PCBs in the United States, now limits its PCB sales to use in the "closed systems" of capacitors and transformers. Nevertheless, amounts for other uses are being imported from abroad, and there are no legal controls over the uses of PCBs. As recently as this year, state and federal agencies have identified fourteen types of products containing PCBs, including copy-reproduction toner, primers, toilet soaps, and waste paper used in recycling. PCB residues still remain high in some areas, and their dispersal throughout the environment is thought to be virtually ubiquitous. Recently, PCBs were discovered in the drinking-water supply of a remote Air Force facility on Johnson Island in the South Pacific.

Concern over PCBs intensified this year with the discovery that pollution levels were increasing largely because of contamination from electrical-manufacturing plants. The increases have rendered fish inedible in several areas and have wiped out the striped-bass fishery in the Hudson River. PCB contamination continues to halt commercial and sport fishing in Lake Michigan. PCBs are stored in fatty tissues, and it has been documented that fish and other aquatic organisms accumulate the substance in amounts greater than 40,000 and 75,000 times the levels to which they are exposed. It has been estimated that forty percent of the American population contains one part per million or more of PCBs in their fatty tissues. We are just beginning to get some idea of how serious the consequences may be for human beings. We already know that PCBs produce biochemical changes in fish, even when present at very low levels. Adverse effects on reproduction have been observed in rhesus monkeys, minks, rats, and many species of birds. The studies on primates are especially alarming because they involved PCB levels as low as 2.5 and 5.0 parts per million. Experiments on rats also revealed that PCBs were liver carcinogens.

## MAPPING CANCER



Publication this past summer of the National Cancer Institute's cancer maps of the United States provided one of the more graphic examples of the probable effects of environmental pollution on human health. The maps reflect age-adjusted death rates from cancer on a county-by-county basis for thirty-five anatomical sites (liver, lungs, etc.) of cancer. The original data were obtained from twenty years (1950 to 1969) of death certificates.

The map reproduced here for the entire country shows that cancer mortality is not uniform, but is clustered in certain geographic areas. The darkest areas indicate that a county's death rate from cancer falls in the top ten percent of all counties (there is only a five-percent possibility that this variation from the normal cancer death rate can be attributed merely to chance). Knowing that sixty to ninety percent of human cancer is environmentally caused, environmentalists have been quick (and right) to note that particular conditions in certain counties appear to play a role in the higher death rates for those counties.

The maps and backup data demonstrate several relationships that epidemiologists had already noted or predicted. For example, cancer-mortality rates are generally higher in urban than in rural areas; nonwhite males have the highest death rates from cancer, followed by white males, and then females regardless of race. The map also reveals some previously unknown clusters of cancer that correspond with some of our most polluting industrial complexes. For instance, counties in the rural West that have a relatively high number of workers employed in smelters also tend to show higher cancer mortality rates. Similarly, bladder cancer is highest among chemical

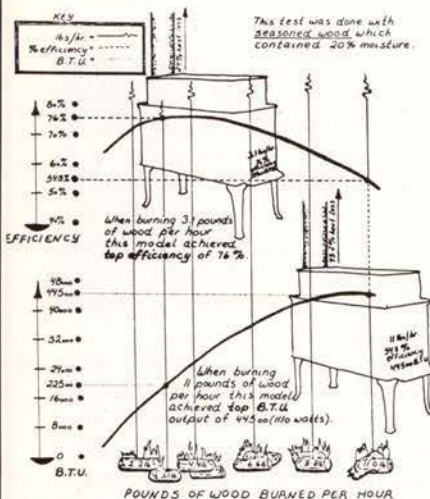
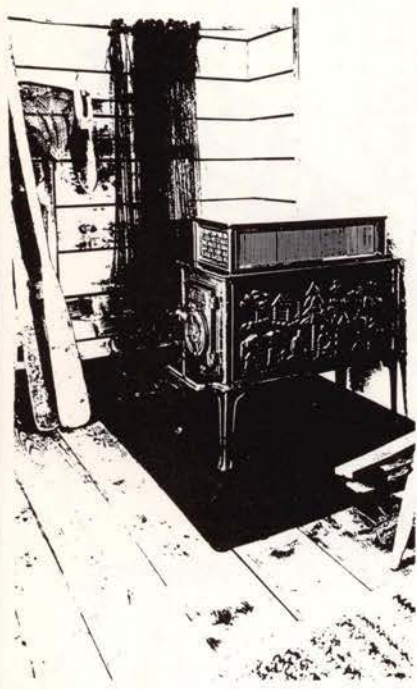
workers who are exposed to compounds experimentally proved to cause cancer in animals. Thus, almost every county in New Jersey is shaded black, as are Detroit, Chicago, and their environs. These areas are the traditional homes of the chemical industry. A final example: some of the most notorious government-testing and chemical-warfare facilities are located in areas of high lung-cancer mortality. These include the Nevada Proving Grounds; Pine Bluff, Arkansas; Dugway Proving Grounds in Utah; and China Lake, California.

That high cancer-mortality rates are clustered along with environmentally noxious facilities, however, does not prove that the facilities caused the increase. (If so, then one could also conclude that the alligators clustered in South Florida and Louisiana caused the high cancer rates there.) But this phenomenon does provide food for thought. What can be done with the maps at this stage? They are immensely useful in suggesting new hypotheses, which, in turn, will stimulate further research and experimentation.

In fact, scientists at the National Cancer Institute, and elsewhere, have already conducted, and are now conducting, studies to test hypotheses drawn from the maps. Environmentalists should insist that state epidemiology departments, universities, or private firms do likewise. Moreover, we should insist on cancer-prevention measures at least in the workplace itself. Otherwise, the tragedy of cancer, which already strikes about 90,000 industrial workers each year, will continue its spread to the community.

*George Coling*

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Continued from page 27  
 from a PVC bottle. As Anthony Maz-zocchi of the Oil, Chemical and Atomic Workers Union has pointed out, "Someone assumes that something one is using is safe because no one has been told that it is unsafe. And people have this habit of thinking that someone is looking after them. They really don't know that these items have not been tested."

The tragedy of this situation is that it could have been avoided before vinyl chloride had caused even one case of angiosarcoma or one attack of meat packer's asthma. As Senator John V. Tunney of California said during the Commerce Committee's hearings on vinyl chloride in 1974, "It is absolutely indefensible to me that the only way we became aware of the dangers of vinyl chloride was because of the deaths of at least sixteen vinyl-chloride workers." Lack of technology is not to blame; scientists have in their possession the ability to determine what substances are detrimental to man and the environment. It is inexcusable that with such knowledge available these men and women were allowed to come in contact with the substance that caused their deaths.

## TOXIC SUBSTANCES CONTROL ACT

UNTIL RECENTLY, public concern about chemical pollutants was largely restricted to regulation of air and water pollution, pesticides, food additives, drugs, and occupational exposure. But over the past five years, pollution, disease, and death from exposure to toxic substances have increased markedly. Evidence indicating a number of substances continues to accumulate, some of it already conclusive. Yet Congress has done nothing to solve the problem, having spent these same years fruitlessly debating the issue. Legislation controlling toxic substances has been introduced in both houses in the past, but has come to nothing, thanks to intensive lobbying by the chemical industry, which has succeeded in clouding the important issues. Letters from manufacturers expressing fear that such legislation would put many of them out of business have flooded the offices of Congress. Unfortunately, these same offices have received few letters favoring the legislation, this, largely because the public has simply been unaware of the problem.

There is still time to do something. Legislation that would control toxic substances is now before both houses of Congress. In the Senate, Tunney has once again assumed leadership on this issue, gaining early hearings for his bill, S. 776, the Toxic Substances Control Act (TSCA). Although environmental groups and other supporters of the legislation have suggested a few changes, for the most part S. 776 is an excellent bill that takes many steps in the right direction. As in the past, the bill has come under heavy attack from the chemical industry. Supporters of the legislation in the Senate Commerce Committee fear that once again it will fail because of strong industry protest and the small volume of mail supporting the measure. A Senate floor vote is expected at the end of the year.

In the House, a critical battle on toxic-substances-control legislation is shaping up in the House Interstate and Foreign Commerce Committee, most of whose members formerly have turned a more sympathetic ear to the complaints of the chemical industry. Representative Lionel Van Deerlin of California, whose subcommittee will review the legislation, has taken a go-slow approach. The main bill the committee will work on is sponsored by Representative Robert Eckhardt of Texas, who, along with John Moss of California, has been one of the most effective supporters of the TSCA in the House. While the Eckhardt bill does not satisfy environmental groups on some key points, such as premarket testing, it is a substantial improvement over former House versions. Eckhardt is expected to continue to play an important role in shaping the legislation. Full committee action is not expected until late this year, with a House floor vote unlikely until early in 1976.

A new champion has emerged in Representative William Broadhead of Michigan, who has introduced HR. 7548, the Federal Toxic Substances Control Act, an excellent bill supported by environmentalists, public-interest groups, and some labor groups. It contains the following provisions:

- The Environmental Protection Agency (EPA) would have to require premarket screening of all new substances or significant new uses of existing ones to find out what, if any, hazards are posed, and further, would



have to require testing of existing substances and products when this is deemed prudent;

- EPA would regulate the manufacture, distribution, use, and disposal of hazardous or potentially harmful substances;
- EPA would be authorized to protect the public from hazardous substances posing an imminent danger, to seize substances or products in violation of



the law, and to allow citizens to bring suit to ensure enforcement of the law;

- Strong penalties would be provided for violators;
- EPA would be authorized to gather data on chemical substances currently in use through research, monitoring, and the preparation of reports;
- Employees would be protected from retaliation and provided with special assistance in case of bona fide job losses;
- Loans would be authorized for small businesses that may suffer economic hardship from the act's testing requirements;
- EPA would be granted flexible authority to exempt laboratory and research chemicals (the majority of which are made in very small batches and have very limited uses);
- The act would preserve the force of existing laws, such as the Occupational Safety and Health Act, the Clean Air Act, and the Water Pollution Control Act, while allowing EPA full authority to apply the provisions of the Toxic Substances Control Act;
- The act would provide for disclosure of health and safety information on substances (information now concealed by manufacturers under the guise of "trade secrets").

The industry claims to support control legislation (with the notable exceptions of Dow Chemical and many small manufacturers, who oppose it strongly), but not this particular bill.

It instead favors HR. 7764, by Representative John Y. McCollister of Nebraska, which is substantially weaker than the Broadhead bill in many key respects. The McCollister bill is essentially the same as two previous bills that were passed by the House. In fact, although bills have passed in both the House and the Senate in previous congresses, their differences proved irreconcilable. In both cases, environmentalists supported the Senate versions, and the chemical industry supported the House bill. Neither side was willing to compromise.

The point of critical difference has been testing requirements. Chemical companies, fearing that EPA would be overzealous, have favored tight restrictions on EPA's authority and discretion. The industry would allow EPA to order testing of only those substances that have already been shown to be hazardous. The burden of proof would be on EPA. Thus, in effect, tests would be allowed on substances that least need them, but forbidden on substances of which we are most ignorant. Furthermore, EPA would be allowed to require premarket testing only on substances that it would officially list as posing an unreasonable risk. Catch 22: such risk can only be determined by the tests that are forbidden until such risk is shown.

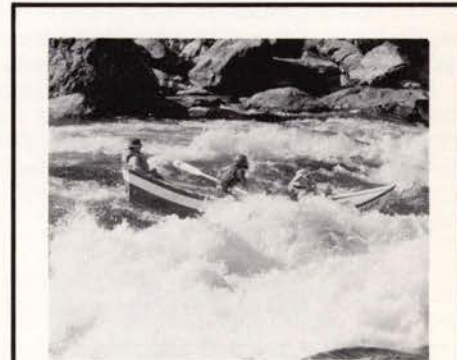
The chemical industry is most concerned, of course, about the costs of testing. The Manufacturing Chemists Association estimates that they would range from \$358 million to more than \$1.3 billion a year, but refused to release the data on which this calculation is based. Preliminary information obtained from them indicates, however, that the higher figure is based on the assumption that a very large number of chemicals would be tested, using the most expensive tests, as, for example, is the case with chemical pesticides. The fallacy here is that pesticides are poisonous by definition and must therefore be submitted to the most rigorous testing procedures. This is not the case with most industrial chemicals.

EPA has charged that the estimated testing costs in the Manufacturing Chemists Association's report are excessive, that the actual costs will more than likely range between \$80 and \$140 million a year. Costs of this magnitude would hardly induce

bankruptcy in the sector of the industry most likely to be affected, namely, the giant producers. Last year, chemical-industry sales were \$72 billion, and profits after taxes exceeded \$5.5 billion. The small manufacturers' fears of bankruptcy are not realistic since very few of them are engaged in developing new chemicals.

But if we are going to talk about costs, we should also consider the costs of *not* initiating a testing program for new substances. Right now, the costs to society from death, disease, and disability as a result of pollution from toxic chemicals far exceed any projected costs of testing. The costs in suffering are incalculable. The time never was here when human beings and the environment should have been used as guinea pigs for substances that should have first been tested in the laboratory. It is time to enact a strong toxic substances control act. Please send your letters to your congressmen and senators now. Ask them to support S. 776 and HR. 7548 — while there is still time.

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# RESERVATIONS FOR SIERRA CLUB TRIPS

## RESERVATION INFORMATION

Our trips are open to Sierra Club members, applicants for membership and members of organizations granting reciprocal privileges. Children under 12 need not be members.

Reservations are generally accepted in order received; however, some trips require the leader's acceptance of each applicant. If this requirement applies, it will be noted in the **Bulletin** write-up or in the trip supplement.

One reservation form may be used by an individual or by a family to apply for each trip. Here 'family' means parent(s) and their children under 21. Other family members must submit separate applications and deposits.

You may include new membership applications and fees with your outing application. Please do **not** include other dues or book orders.

## PAYMENTS, CANCELLATIONS, REFUNDS AND TRANSFERS

Generally, everyone pays the same price for a trip. Children are not entitled to a reduced price except on special family outings which are listed in the write-up. If you must cancel a confirmed reservation or a space on a waiting list, please notify the office promptly.

### North American Trips

Send in \$25 with each family or individual reservation application. The reservation deposit is applied to the total trip price and with few exceptions is non-refundable. Some trips may require a larger deposit; check the individual trip description for this information.

The **balance of the trip price** is due 90 days before the beginning of each trip. Payments for trips that require the leader's acceptance of each applicant are due at this time regardless of the applicant's status. You will be billed before the due date. If payment is not made on time, your reservation may be cancelled.

**Refunds** following cancellation of a confirmed reservation (less the non-refundable deposit) are made as follows: 100% up to 60 days before the trip begins; and 90% during the 60-day period before the trip begins. Refunds are based on the date notice of cancellation is received by the Outing office. No refund will be made if you leave during the trip.

If you have a confirmed reservation and wish to **transfer** to another trip, a \$25 transfer fee will be charged unless your reservation application is still pending the leader's acceptance or if you are on a waiting list.

### Foreign Trips

There are no 'family' reservations on foreign outings, so send in \$50 per person with your reservation application. This reservation deposit is applied to the total price and with few exceptions is non-refundable. An additional payment of \$200 or more is due 6 months before the trip begins.

The **balance of the trip price** is due 90 days prior to trip departure. Payments for trips that require the leader's acceptance of each applicant are due at this time regardless of the applicant's status. You will be billed before the due date. If payment is not made on time, your reservation may be cancelled.

**Refunds** following cancellation of a confirmed reservation (less the \$50 per person non-refundable deposit) are made as follows: 100% of any payment up to 6 months before the trip begins or if you cancel within 6 months of trip departure and the vacancy created is filled from the waiting list. If no replacement is available, costs and overhead will be deducted from the total payment, and the refund will be made after the trip is completed. Refunds are based on the date notice of cancellation is received by the Outing office.

A **transfer** of a confirmed reservation from a foreign trip is treated as a cancellation. Refunds are made under the cancellation policy stated above.

### ADDITIONAL CONDITIONS

Reservations are subject to additional conditions relating to transportation, emergency evacuation, and conduct during a trip. A complete statement accompanies each reservation acknowledgment and is available upon request.

### FULL REFUND

Refund of the reservation deposit and all payments will be made only under the following conditions: 1) if a vacancy does not occur or if a person cancels off a waiting list; 2) if a reservation is not accepted or 3) if the Sierra Club must cancel a trip.

**Mail checks and applications to: SIERRA CLUB OUTING DEPT., P.O. BOX 7959, SAN FRANCISCO, CA. 94120**  
**Mail all other correspondence to: SIERRA CLUB OUTING DEPT., 530 BUSH STREET, SAN FRANCISCO, CA. 94108**

MEMBERSHIP NO. (CHECK BULLETIN LABEL)			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. <input type="checkbox"/>		
City	State	Zip Code	Residence telephone (area code)	Business telephone (area code)	
PLEASE PRINT <b>YOUR</b> NAME AND THE NAMES OF ALL FAMILY MEMBERS GOING ON THIS OUTING			Age	Relationship	Membership No.
					How many national trips (not chapter) have you gone on?
1.					
2.					
3.					
4.					
5.					
6.					

# 1976 SIERRA CLUB OUTINGS

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## Spring Trips

As usual, the 1976 Spring Outings will be concentrated in the desert and canyons of the Southwest and Mexico, where the splendors of spring must be seen to be appreciated. Early in the year when the rains come, temperatures are in the balmy range and wildflowers burst out overnight. But don't forget the other trips, wilderness outings by canoe in the Okefenokee, camping on Hawaiian beaches, ski-touring in Colorado or the Adirondacks, and leisurely boat trips off the Mexican coast.

Sierra Club trips which average from 12 to 30 members, 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 "Reservations for Sierra Club Trips."

**(20) Ski Touring Clinic, Steamboat Springs, Colorado—January 11-16.** Leader, Sven Wiik, Scandinavian Lodge, Box 5040, Steamboat Village, CO 80499. Cost \$50.

Here is an opportunity for five days of excellent skiing with all levels of touring instruction. Sven was once the coach for the U.S. Nordic team and employs recent Nordic team members as instructors. Program includes selection and care of equipment, ski touring technique, half and full day tours all covered by the trip fee. Separate arrangements must be made with Sven for the fantastic experience of staying at the lodge.

**(21) Adirondack Ski Touring and Ski Mountaineering, New York—February 1-7.** Leader, Walter Blank, Omi Rd., West Ghent, NY 12075. Cost \$125.

A series of cross-country tours into the heart of the Adirondack Forest Preserve. Skiers must be of strong intermediate or expert ability. Three nights will be spent at the Adirondack Lodge, two nights will be spent camped out in lean-tos, one night in a log cabin deep in the Forest Preserve. The trips will be moderately strenuous but some of the terrain will be demanding. All of the trips can be done on cross-country skis, however mountain skis would be superior on Mt. Marcy.

**(22) Desert Ecology, High-Light, Baja California—February 6-17.** Instructor, Pierre C. Fischer, botanist; leader, John Ricker, 2950 N. 7th Street, Phoenix, AZ 85014. Cost \$280.

On this trip we will enjoy the beauty and wildness of central Baja California, as well as learn about the unique vegetation and ecology of this peninsula. We will contrast the flora and appearance of the moist and cool Pacific coast area with that of the hot and dry gulf coast and gulf islands. We will take a boat to Angel de la Guarda Island to see a

great number of sea birds, seals, and (hopefully) whales. Snorkeling is a possibility but a wet suit is a must. University credit may be available at extra cost.

**(23) Cross Country Ski, Rocky Mountain Park, Colorado—February 8-13.** Leader, Kurt Newton, 195 South Pennsylvania, #301, Denver, CO 80209. Cost \$85.

Come join us for six days of fun-filled ski touring in Western Rocky Mountain Park. We'll sleep in a park service building with daily trips radiating from there. Trips will vary in distance and terrain. Winter camping will be discussed in detail and, with adequate snow cover, we will practice constructing various snow shelters. Other attractions include: great food, a fun race, an optional night out in snow caves or tents.

**(24) Okefenokee Canoe Trip, Georgia—March 28-April 2.** Leader, Lincoln E. Roberts, 2152 Cross Creek Way, Dunedin, FL 33528. Cost \$135.

Experience spring in a true wilderness filled with moss-covered cypress, floating islands of peat, alligators, otters, and other creatures of this blackwater swamp. We will spend six leisure-to-moderate days making a loop trip through this land of Pogo in the Southeast. Canoe skills are desirable, but the most important prerequisite is cheerfully accepting what comes. Minimum age 14 with sponsor. Canoes are not provided, but rentals are available.

**(25) Natural History of the Death Valley Desert Region, High-Light, California—March 28-April 3.** Instructor/leader, Norman Kindig, 3684 Sweigert Rd. San Jose, CA 95131. Cost \$150.

To explore this rugged country, participants will have to provide at least six 4-wheel or truck type vehicles. Normal operating expenses during the trip will be reimbursed. Prospective trip members who have this type of vehicle should contact the leader immediately. Campfire discussions will accentuate the harsh reality yet fragility of the desert. Trip members will see how plants and animals have adopted unusual ways of survival. University credit may be available at extra cost.

**(26) Panamint Mountains Burro Trip, California—March 29-April 4.** Leader, Dan Holmes, 11 Cresta Blanca, Orinda, CA 94563. Cost \$155.

This strenuous burro adventure begins near the stark desert town of Ballarat and ascends the steep west slope of the Panamint Mountains through a narrow canyon lined with colorful rocks, barrel cacti and juniper trees, then follows a rugged descent into Death Valley. Various mines from the 19th century will be along the way. Our wonderful trail companions, burros, provide help by carrying food, water and dunnage.

*Andrew D. Crofut, Jr.*



**(27) Gila River Boat Trip, New Mexico—April 4-10.** Leader, John Ricker, 2950 N. 7th St., Phoenix, AZ 85014. Cost \$90.

We will take advantage of the spring runoff to traverse the white water of the upper Gila River. The trip will start at Forks of the Gila, run through Gila Canyon and end just below the proposed site of Hooker Dam. This section of the river is in the Gila Wilderness area and should be considered for a Wild & Scenic River. Trip members must furnish their own boats. Rubber rafts or inflatable kayaks should be used although experienced white-water kayakers (with covered canoes or rigid kayaks) will be accepted.

**(28) Death Valley Burro Trip, California—April 4-10.** Leader, Jack McClure, 75 Castlewood Dr., Pleasanton, CA 94566. Cost \$155.

From the floor of Death Valley, this outing will guide you up 9000 feet onto the top of the west wall of the Valley. Frequent visits to the remnants of the now distant mining days shall be complemented by fine views of rugged mountains. A new strip mining threat to Death Valley is one of the conservation issues to be discussed. Our well-trained, friendly burros, easily handled by both children and adults, will be a major source of enjoyment. Trip members should be in good condition.

**(29) Springtime on Lanai, Hawaii—April 9-18.** Leaders, Lynne & Ray Simpson, 604 Hartnell Place, Sacramento, CA 95825. Cost from California \$525 (children 5-12 \$425). Hawaii residents \$225. \$25 deposit per person.

Sparsely inhabited Lanai reflects the atmosphere of an earlier Hawaii. Our camp will be a Kiawe tree-shaded white sand crescent beach and trip activity will emphasize hiking, snorkeling, swimming and beach-combing. Our first days will be spent on the island of Oahu where, expertly guided by Bishop Museum staff, we will explore the cultural heritage of the Hawaiian people.

**(30) Natural History of the Anza-Borrego Desert, Base Camp, California—April 11-17.** Instructor, Will Neely; leader, Ray Des Camp, 510 Tyndall St., Los Altos, CA 94022. Cost \$150.

This Easter Special will be in the largest state park in California, with our camp located near Borrego Springs, 90 miles northeast of San Diego. The outing is designed for those who would like, with the help of a naturalist, to explore and study the natural wonders of the living desert in bloom. We will use members' cars to radiate out to various points of interest from which our daily hikes will begin. Most of the hiking will be very easy.

**(31) Middle Fork of Salmon River Raft Trip, Idaho—April 25-30.** Leader, Harry Neal, 25015 Mt. Charlie Rd., Los Gatos, CA 95030.

This spring trip takes us through the canyons, pools and rapids of the fabulous Middle Fork at a time when few others are on the river and wildlife is undisturbed. Weather may be on the cool side but is often beautiful. Cost includes flight from Boise to Indian Creek put-in, and ground transportation from take-out (at confluence with Main Salmon) to Salmon, Idaho.

**(32) Thunder River-Kanab Canyon, Grand Canyon Park High-Light, Arizona—April 25-May 7.** Leader, Allen J. Malmquist, Box 388, Fredonia, AZ 86022. Cost \$210.

Starting off the North Rim, we will explore Thunder River, Tapeats Canyon and Deer Creek, then hike along the Colorado River and head out to the rim up Kanab Canyon. There will be five layover days. All food will be carried by pack mule and we will backpack only our personal gear (20 lbs. limit) making this a moderately easy way to enjoy one of the finest areas of the Grand Canyon.



## Knapsack Trips

Knapsack trips offer the most 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, moderate, and strenuous 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. Of course, optional recreation activities and the weather cannot be accurately predicted; early-season trips in high mountains, for example, tend to be more adventurous because of snow and full streams.

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

The demands of knapsacking require that the leader approve each trip member based on response 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.

**(33) Baja Traverse, Mexico—February 13-21.** Leader, Tom Erwin, 2791 Oakmont St., Sacramento, CA 95815. Cost \$210.

Starting on the Sea of Cortez, this unusual trip will cross the desert, climb through various other life zones to a 7000-foot pass and descend to the Pacific Ocean. Indian ruins dot the terrain and a rich Spanish history makes this an opportunity to learn more about the southern Baja area. The pace will be moderate with some of the commissary being carried by mules.

**(34) Desert Ramble, Superstition Wilderness, Arizona—March 7-13.** Leader, John Peck, 4145 E. 4th St., Tucson, AZ 85711. Cost \$80.

Travel over desert flats among jagged desert mountains, past pristine Indian ruins in colorful deep rocky canyons. Moderate, good food, simple air access.

**(35) Hells Canyon Cleanup-Backpack, Oregon-Idaho—March 20-26.** Leader, Don Coppock, Box 196 Reed College, Portland, OR 97225. Cost \$50.

The spectacular diversity of the deepest gorge in North America will be evident as trip members backpack down into the canyon from the Oregon rim. Work will involve cleaning camp sites and the demolition of farm structures that mar the natural beauty of the area. Swimming, exploring historical sites, and a jet boat ride down the Snake River will be highlights. Minimum age 16.

**(36) Mazatzal Wilderness, Arizona—March 20-27.** Leader, David Mowry, 4323 N. 23rd Ave. #15 Phoenix, AZ 85015. Cost \$80.

This moderate trip consists of a traverse along the forested crest of the Mazatzal Mountains in central Arizona. Steep side canyons and superb views of Arizona's Zane Grey country will be encountered. Side trips will include a scramble to the summit of Mazatzal Peak (7903).

**(37) Hance-Tanner Trails, Grand Canyon, Arizona—March 28-April 3.** Leader, Jim De Veny, 5307 E. Hawthorne, Tucson, AZ, 85711. Cost \$90.

A moderate trip descending the New Hance Trail from the South Rim. We will see a variety of areas—from the confines of the Inner Gorge to the wide open spaces dominated by the Grand Canyon series of rocks.

**(38) Grand Canyon Knapsack Trip—April 4-10.** Leader, Lester Olin, 2244 Avenue A, Yuma, AZ 85364. Cost \$80.

This trip will explore some of the most remote portions of the Grand Canyon. We will explore several side canyons and make at least one trip to the river. This trip will be very

### FOR MORE DETAILS ON SPRING OUTINGS . . .

For more information on any of these trips, write the Sierra Club Outing Department for the specific supplement of that outing. Trips vary in size, cost, in the physical stamina and experience required. New members may have difficulty judging from these brief write-ups which one is best suited to their own abilities or interests. Don't be lured onto 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. Beyond the first five supplements requested, volume requires that we must charge 50 cents each. Write or phone the trip leader if any further questions remain.

strenuous and involve considerable cross country walking since there are almost no trails in this part of the canyon.

**(39) Ottoman Amphitheater, Grand Canyon Park, Arizona, April 11-16.** Leader, Bob Madsen, 3950 Fernwood Way, Pleasanton, CA 94566. Cost \$110.

From the South Rim via South Kaibab and Clear Creek trails to the Ottoman Amphitheater. Two layover days are planned to explore the area. Thirty-six trail miles with pack, and about thirty cross country miles sans packs are planned to rate this a moderate trip.

**(40) South Bass Trail to Tapeats, Grand Canyon, Arizona—April 17-24.** Leader, Tom Pillsbury, 1735 Tenth Street, Berkeley, CA 94710. Cost \$140.

This strenuous trip will descend the South Bass Trail to the Colorado River, cross the river by small rubber boat which we will carry with us and climb to the North Rim via Muav Saddle, Saddle Canyon, and Tapeats Canyon. Most of the trip will be cross country in a seldom visited part of the Grand Canyon.

**(41) San Rafael Range Ecological Traverse, Los Padres Forest, CA—April 24-30.** Instructor, Will Neely; leader, Mary Coffeen, 851 Amador, Claremont, CA 91711. Cost \$95.

This leisure trip crosses the San Rafael and Santa Ynez ranges at their springtime best and provides opportunity to study first hand, the living dynamics of chaparral, riparian woodlands and fire ecology with a naturalist who lives there. Maximum climbs will be 1500 feet; descent, 2680 feet. Longest hiking day is seven miles.

**(42) Sierra de San Pedro Martir, Baja California, Mexico—May 16-22.** Leader, Tom Pillsbury, 1735 Tenth Street, Berkeley, CA 94710. Cost \$90.

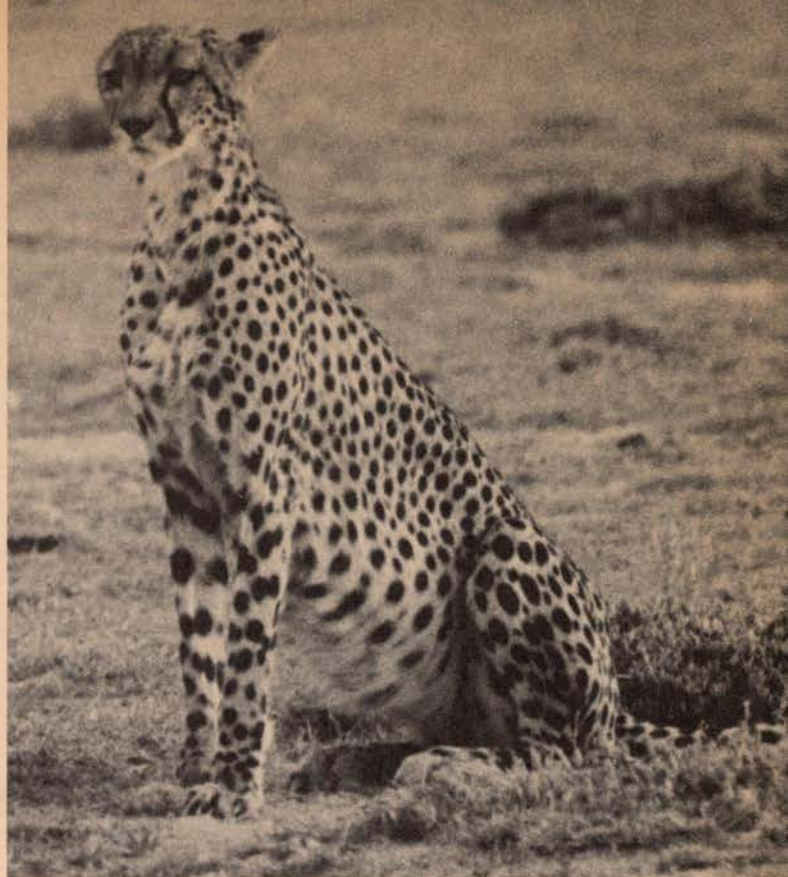
This moderate trip will be in the forested part of Baja California's highest mountain range. We will meet at the Meling Ranch and walk cross country or over faint trails about fifty miles. An optional climb of Blue Bottle Peak (9500) and a visit to the ruins of the old Mission of San Pedro Martir will be included.

**(43) Mystery Canyon, Utah—May 22-29.** Leader, Frank Nordstrom, 800 Glade Rd., Farmington, NM 87401. Cost \$100.

Each year we select a new canyon to explore in Utah's southern desert. The weather is mild, the scenery magnificent. Desert flowers are at their best, and lucky hikers will glimpse shy desert animals. Evidence of ancient civilizations abound. Trip is moderate in difficulty. There will be a lottery to select participants.

**(44) Escalante Canyon, Utah—May 24-June 4.** Leader, Tom Pillsbury, 1735 Tenth Street, Berkeley, CA 94710. Cost \$160.

This moderate trip will start at Harris Wash and end at Calf Creek in the Escalante Canyon. Escalante Creek, which forms the canyon, flows into Lake Powell just upstream from the Grand Canyon. There is always fresh water in the creek and in several of its side canyons. Most of the time we will be wading in the narrow canyons and exploring the many beautiful grottos and caves.



Beverly F. Stevenson

## FOREIGN OUTINGS

Sierra Club foreign outings for 1976 include a first, Greenland, and visits to many other exotic countries on the four major continents as well as New Zealand. All are as close to the land and people as possible. The trips average from 15 to 25 members. A \$50 per person deposit is required with your reservation. Prices quoted are approximations and do not include air fare.

### Galapagos Islands, Ecuador (410) January 28-February 18

Our smaller vessels will permit us to land on islands not reached by large groups on bigger boats. Leader, H. Stewart Kimball, 19 Owl Hill Rd., Orinda, CA 94563. Cost approximately \$1200 plus air fare.

### Kenya Saddle and Game Viewing (415) January 29-February 21

Ten full days in the saddle, plus a week in Landrovers will allow a close study of African game. Leader, Tony Church, Nairobi; coordinator, Al Schmitz, 2901 Holyrood Dr., Oakland, CA 94611. Cost approximately \$1475 plus air fare.

### Tazmania and New Zealand (425) January 31-March 6

Base camps, knapsack travel and a week's stay in a ski chalet will help us get to know these islands. Leader, Al Schmitz, 2901 Holyrood Dr., Oakland, CA 94611. Cost approximately \$1575 plus air fare for the five weeks.



**Trisuli-Gatlang Valleys, Nepal (430) March 20-April 14**

Travel by elephant, Landrover, air and foot will round out our stay in this fascinating area. Leader, Bob Stout, 10 Barker Ave., Fairfax, CA 94930. Cost approximately \$1225 plus air fare.

**A Spring Outing to Japan (438) April 17-May 16**

We will follow the cherry blossoms northwards as we visit areas seldom seen by tourists. Leader, Claude A. Look, 411 Los Ninos Way, Los Altos, CA 94022. Cost approximately \$1100 plus air fare.

**Spain: Central Pyrenees (439) June 27-July 16**

Moderate trail hiking in the central Pyrenees with a swing into France south of Lourdes. Leaders, Aurora Dorado of Spain and Lewis Clark, 1349 Bay St., Alameda, CA 94501. Approx. cost from Barcelona, \$770.

**Northern Frontier District, Kenya (445) July 1-28**

Tented base camps will alternate with stays in lodges as we study game animals and native culture. Leader, Tony Church, Nairobi; coordinator, Al Schmitz, 2901 Holyrood Dr., Oakland, CA 94611. Cost approximately \$1450 plus air fare.

**Walking in Norway (447) July 3-20**

High mountains and fjord country will be reached as we travel by train, bus, boats and on foot. Guide, Arnold Stenersen from Norway; Leader, Betty Osborn, 515 Shasta Way, Mill Valley, CA 94941. Cost approximately \$525 plus air fare.

**Galapagos Islands, Ecuador (450) August 9-September 2**

Excursions and overnight hikes will visit volcanoes, rain forests and a research station. Leaders, Betty Osborn, 515 Shasta Way, Mill Valley, CA 94941, and Salem Rice. Cost approximately \$1200 plus air fare.

**Indonesia: Java, Bali, Sulawesi (460) July**

A five-week in-depth view of the culture and ecology of this fabled land, led by a former resident. Leader, Ray Simpson, 604 Hartnell Pl., Sacramento, CA 95825. Cost approximately \$1000 plus air fare.

**Austrian and Swiss Alps (448) July 17-August 2**

Days of moderate hiking will lead to mountain huts set on lofty ridges and in idyllic valleys. Leaders, Brad Hogue, 3750 Long Ave., Beaumont, TX 77706 and Wayne R. Woodruff, P.O. Box 614, Livermore, CA 94550. Cost approximately \$500 plus air fare.

## Mexican/Guatemalan Boat Trips

**(406) River of Ruins Raft Trip, Guatemala & Mexico—March 4 to 19.**

Leader, Frank Hoover, 900 Veteran Ave., Los Angeles, CA 90024. Cost approx. \$650 plus air fare; deposit \$50 per person.

From Tikal, premier city of the Mayan civilization, we will go by road to Sayaxche, where the river trip starts. Our river voyage terminates at Tenosique, Mexico, but we will continue by road, ending at Palenque. Layovers are planned at Yaxchilan and Piedras Negras, with shorter stops at other archaeological sites. Members will run the boats and prepare the food. March is in the dry season, and jungle camping is pleasant. Minimum age 12.

**(407) Sea of Cortez Leisure Boat Trip—April 3-10.** Leader, Rouen Faith, 6122 Montgomery Ct., San Jose, CA 95135.

**(408) April 10-17.** Leader, Monroe Agee, 13750 Rivulet Rd., San Jose, CA 95124. **(409) April 24—May 1.** Leader, Frank Hoover, 900 Veteran Ave., Los Angeles, CA 90024. Cost \$545 round trip from San Diego includes air fare to La Paz; deposit \$50 per person.

These cruises are adventures in sea life, designed to meet the requirements of both the physically active and lazier ones. The three trips go between La Paz and San Felipe. These are coastal trips along the east coast of Baja California. We will visit exotic islands and observe the abundant sea life of whales, dolphins, sea lions, frigate birds, boobies and pelicans as they go about their undisturbed way.

**Hiking and Canoeing in Sweden and Swedish Lapland (475) July 22- August 12**

Eight days of canoeing in the lake district combine with eight days of hiking above the Arctic Circle. Leaders, Mary and Ross Miles, 18 Farm Rd., Los Altos, CA 94022. Cost approximately \$745 plus air fare.

**Greenland (480) August 2-17**

Follow in the footsteps of Erik the Red, on this Sierra Club first. Leader, Jim Watters, 600 Caldwell Rd., Oakland, CA 94611. Cost approximately \$450 plus air fare.



**Israel and the Sinai Desert (481) August 23- September 23**

A desert experience set among green oases and ancient settlements including the high red granite mountains of Sinai, the Dead Sea, Jerusalem, the Sea of Galilee and the wildlife and nature reserves of northern Israel. Leader, Ron Eber, Dept. of Urban Planning, Univ. of Oregon, Eugene, OR 97403. Cost approximately \$875 plus air fare.

**Walking in Wales (483) September 4-19**

Two weeks of hiking in the mountains and ruggedly beautiful National Parks of Wales. Leaders, Lori and Chris Loosley, 22 Westbury Rd., New Malden, Surrey KT3 5BE, U.K. Cost approximately \$525 plus air fare.

**Netherlands Afoot and Afloat (485) September 7-21**

We will explore the sanctuaries for bird and animal life on and around the islands of northern Holland. Leaders, Margaret and Ellis Rother, 903 Sunset Dr., San Carlos, CA 94070. Cost approximately \$550 plus air fare.

**Kenya Mountains to the Sea (510) September 30-October 22**

Game drives and hikes, several days of boating, and beach combing will furnish a variety of experiences. Leader, Al Schmitz, 2901 Holyrood Dr., Oakland, CA 94611. Cost approximately \$1500 plus air fare.

**Ganesh Himal-Gurkha Himal, Nepal (515) October 2-November 6**

Twenty-five days of trekking will visit the home of the warriors who founded the present Nepalese culture. Leader, Edith Reeves, 1739 E. San Miguel, Phoenix, AZ 85016. Cost approximately \$1375 plus air fare.

**Pokhara to Jumla, Nepal (520) October 30-December 5**

A splendid cross section of western Nepalese life and landscape through deciduous forest above Dhorpatan to the rugged arid slopes surrounding Jumla with views of Macchapuchare, the Annapurna Himal and Dhaulagiri. Leader, John Edginton, 2733 Buena Vista Way, Berkeley, CA 94708. Cost approximately \$1450 plus air fare.

**Natural History Trek through Kathmandu Valley, Nepal (525) November 18-December 11**

Rain forests are rich in plant life, and birds are especially abundant and varied at this time. Naturalist, Dr. Robert L. Fleming, Sr., Kathmandu; coordinator, Al Schmitz, 2901 Holyrood Dr., Oakland, CA 94611. Cost approximately \$900 plus air fare.

**Polynesian Christmas (540) December 10-January 6**

Our cultural experience in Polynesia compares the island groups of Tahiti, Fiji and Tonga, as we take part in native ceremonies, visit villages and travel by foot, boat and plane among these tropical islands. Leader, Ann Dwyer, 125 Upland Rd., Kentfield, CA 94904. Cost approximately \$900 plus air fare.

**OTHER 1976 WILDERNESS OUTINGS**

More than two hundred other outings will be described in the Annual Outing Issue of the Sierra Club Bulletin, which will be sent to all members in January. Included will be many more trips in almost every category . . . knapsack trips, boat trips, highlight, burro, education, bicycle and family trips. Information about these outings is not available in the club office at this time.



Al Schmitz

**Hoggar Mountains Camel Caravan, Southern Algeria (530) November-December (3 weeks)**

You may ride your own camel or walk through the spectacular mountain country of the Hoggar in the southern part of the Algerian Sahara, camping with the Touaregs (the blue men) in seldom-visited canyons and oueds (the dry river beds) of the desert. Coordinator, Al Schmitz, 2901 Holyrood Dr., Oakland, CA 94611. Cost approximately \$1350 plus air fare.

## Foreign Underwater Exploration

**Grand Cayman, British West Indies (418) January 4-13**

Reef exploration is the theme of this trip to a favorite dive site, one hour from Miami. Leader, Kent Schellenger, 19915 Oakmont Drive, Los Gatos, CA 95030. Cost approximately \$760 (non-divers \$540) plus air fare.

**Galapagos Islands, Ecuador (419) May 6-29**

Rarely seen even by scientists, Galapagos underwater offers fish, sea lions, penguins, turtles, and iguanas. Leader, Ann Gladwin, 526 Pine Wood Ct., Los Gatos, CA 95030. Cost approximately \$1850 (accompanying non-divers \$1550) plus air fare.

**Grand Cayman, Tropical Reef Biology, British West Indies (420) June 4-15**

A college level course is offered by the leader, a professor of marine biology and NAUI instructor. Leader-Instructor, Rob Spivack, Catalina Island School, Avalon, CA 90704. Cost approximately \$760 plus air fare.

**Grand Cayman, Tropical Reef Biology (Intermediate), British West Indies (421) June 16-27**

This trip, led by a professor of marine biology and NAUI instructor, is especially suited for alumni of previous biology trips or those with some background. Leader-Instructor, Steve Webster, 3202 Maddux, Palo Alto, CA 94303. Cost approximately \$760 plus air fare.

**Samoa, Fiji and Tonga (423) July 7-27**

Scuba and snorkeling in three of the finest sites in the Pacific, plus sight-seeing. Leader, Ann Gladwin, 526 Pine Wood Ct., Los Gatos, CA 95030. Cost approximately \$1950 including air fare from San Francisco.



# A Riverrunner's Library

## Capsule Reviews of Whitewater Guides

**W**HITewater TOURING in America is a relatively new phenomenon. Between 1955 and 1965 fewer than 4,000 people traveled through the Grand Canyon via the Colorado. In 1970, 10,000 made the trip, and in 1972, participants were limited to 16,000 persons a year to prevent further crowding and deterioration of the river environment.

Participation has now increased to the point that most exciting and scenic wild rivers are crowded during periods of preferred water levels, and the biological carrying capacity is often exceeded in campgrounds. Because rafting requires considerable capital investment and skill, most excellent watercourses have first been exploited by commercial companies. These early companies have succeeded in capturing use rights not only among the commercial trade but also from private rafters. Federal agencies now franchise corporations on the Colorado, Snake, Rogue, Salmon, Stanislaus, Green, and other major rivers.

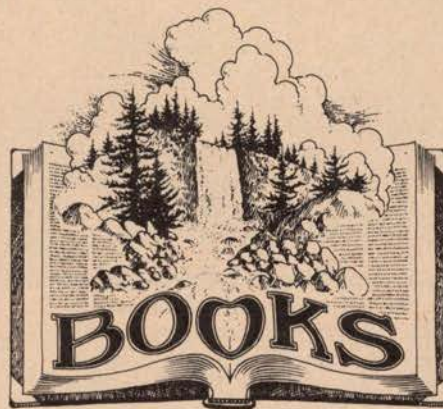
For those who have traveled wild rivers, it is not surprising that use is increasing so rapidly. Rafting on whitewater offers a spectrum of unique experiences and a perspective which is unavailable from the shore. Along some sections, the inherent power of the river may be hidden by its depth and width. The raft drifts lazily along, interrupting the natural flow so little that wildlife scarcely notices the passing.

River canyons meander through remarkably diverse ecosystems. The process of travelling a river can leave these environments absolutely unaffected. Not even footprints are left behind. Then, as a canyon narrows, the pace begins to quicken. In the distance the roar of the rapids turns attention downstream. Yet even as a raft reaches the brink of a drop, the speed is not high. It is the intensity of the unconquerable power of the plunging waves that creates the beauty and the fear. Not even the most powerful crew can overcome the river; safe passage is only allowed when the craft cooperates with the flow.

The immense popularity of wild river touring in rafts occurred without the guidance and encouragement of the popular press. Now, at least seven books ex-

tol the virtues of the river and urge readers to join this already crowded sport.

Bill McGinnis has written an extremely comprehensive whitewater reference, *Whitewater Rafting* (Quadrangle, New York Times Book Company, 1975, \$12.50), primarily for rafters but valuable for all river runners. It runs the gamut from equipment, gear, technique, rigging, first aid (handling disasters), camping, etc. through instructions for building a river sauna and an astonishingly complete national touring overview. He weaves a compendium of hard factual information through a subtle soft-spun sense of humor, harmony,



respect for the river, and old-fashioned fun. The only section needing marked improvement is his food-selection guide.

*River Running* by Verne Huser (Henry Regnery Company, 1975, \$10 hard \$4.95 soft), is another general guide to river touring with *all* inflatables, begins with an interesting account of the rapid growth and subsequent regulation of river running in the United States. Huser covers most of the material treated by McGinnis in a solid but somewhat less extensive and less stylish format.

*Wildwater Touring* (Macmillan, 1974, \$8.95) by Scott and Margaret S. Arighi is an excellent supplement to either of the above books. This work contains excellent chapters on evaluating river-touring difficulty in relation to individual skill, craft suitability, and all aspects of trip organization. In addition, nine long wilderness runs in Idaho and Oregon are described in detail, including

length (distance and time), gradient, access points, flow data and mile-by-mile notes on campsites, rapids, and landmarks.

Michael Jenkinson's *Wild Rivers of North America* (E.P. Dutton & Company, 1973, \$12.95) presents colorful historical and travel chronicles with guide notes for nine wilderness rivers as well as a brief continental inventory (Canada, United States, Mexico, Central America) for 106 wild rivers. It is an intriguing book and a good reference to local information sources and detailed river guides.

The first river-touring guide for California was compiled by river-touring sections of the Sierra Club and several other boating organizations under the direction of Carl Trost in 1971, combining over 150 runs and representing about 1,500 miles. This publication is not readily available to the public, but fortunately, two participants in the Trost study have written complementary guides to West Coast river running.

*West Coast River Touring* (Touchstone Press, Beaverton, Oregon, 1974, \$5.95) by Dick Schwind (member of the Loma Prieta River Touring Section) includes 1,700 miles of river runs for canoes, kayaks, and rafts covering the Rogue, the Illinois, and every coastal river from the Oregon border south to San Luis Obispo. In addition to narration of each run and information on access points, rating and craft classifications, mileage, flows and map information, Schwind includes excellent discussions of river-touring craft, river-rating systems, and legal aspects of touring and hydrology (the author is a research engineer in aerodynamics and fluid flows). He has personally kayaked all but eight of the 170 runs and has had the important details of each run confirmed by other river tourers to assure complete accuracy. His twelve maps illustrating the runs are difficult to read, however, and could be improved.

In *Sierra Whitewater* (Fiddleneck Press, Sunnyvale, California, 1974, \$5.95), Charles Martin (member Bay Chapter River Touring Section) has compiled an extremely thorough guide to rivers of California's Sierra Nevada. He

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*One who is helping her survive*



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covers mileage, gradient, access points, shuttle and technical descriptions for each of the seventy-four runs, using fifty-two well-drawn maps. Difficulty ratings are for kayaks and covered canoes but are an indication to rafters as well. As in Schwind's book, all rivers were traveled by the author or are credited to persons who have made the trip (usually other members of the Trost project). He concludes with a final chapter discussing the political issues of development and need for conservation of remaining Sierra Rivers.

Thomas Harris' *Down the Wild Rivers* (Chronicle Books, San Francisco, 1973, \$4.95) includes many of the rivers treated by Martin and Schwind. More than sixty runs are illustrated by forty very good maps, but the book lacks useful technical information (gradient, flow, season) and concise run documentation (Did the author himself travel all the runs? If so, how many times and at what flows? If not, then what is the run information based on?).

All these books contain fairly extensive appendices of equipment checklists, information sources, outfitters, schools, conservation organizations, etc. None of these books, however, (except McGinnis for rafts) should be relied upon for instructions in actual craft handling technique. Most suggest schools or books for a technique specific to a particular craft. An index of the river sections included in these books and a statistical summary of river-touring suitability is available by writing to the Sierra Club. National Sierra Club outings and many chapters offer wild-river touring. **SCB**

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# Predators, Poison, and Politics

JUANITA WINT

ON FEBRUARY 8, 1972, President Nixon took what may have been the most environmentally positive action of his administration when he issued Executive Order 11643, which suddenly and totally banned all but emergency use of predator poisons on the nation's public lands. In March, the Environmental Protection Agency (EPA) followed by suspending the use of 1080, thallium, strychnine, and cyanide, the environmentally hazardous poisons used in predator control. Before 1972, indiscriminate use of these poisons had created a situation in which untold numbers of nontarget animals were being poisoned in the name of predator control.

This campaign was directed primarily toward the coyote, and 1080, a secondary poison that is persistent in the environment, was the acknowledged favorite for "varmint" control. Injected into a "bait station" (an animal carcass), 1080 certainly did kill coyotes—hundreds of thousands of them, whether they attacked sheep or not. Known as "prophylactic control," indiscriminate poisoning was justified by the notion that reducing the coyote population would automatically reduce predation. Unfortunately, no "coyote only" signs were posted at the bait stations, and all who chose to dine there found the price of the meal exorbitant. Fox, bobcat, mountain lion, hawks, eagles, badger, weasels, even the grizzly—all dead.

In a report (*Predator Control—1971*) to the Council on Environmental Quality and the Department of the Interior, the Advisory Committee on Predator Control concluded that massive and indiscriminate use of poisons was an ineffective and environmentally hazardous means of dealing with predation and should be abandoned in favor of some rational, scientifically defensible, and ecologically sound regime. Environmental groups took essentially the same position in a petition filed in 1971, with EPA requesting the suspension and cancellation of chemical toxicants in predator control.

Although some coyotes do kill

sheep, and the Sierra Club does not oppose controlling individual problem animals, the indiscriminate poisoning during the pre-ban era did little to relieve the problem. Current studies show first, that predation accounts for the loss of only 1.5 to 4.5 percent of the total number of sheep, and second, that this amount is only a quarter of the total number of sheep lost from all causes. While this particular quarter of losses is greeted with outrage by sheepmen, the remaining three quarters are viewed with apparent resignation, perhaps because a large percentage is due to poor management practices.

Since Executive Order 11643 was issued, various ranching interests



Dick Randall

have attempted to weaken both the order and the subsequent EPA cancellation. At one point, while Nixon was still in office, a massive effort on the part of sheepmen resulted in twenty-two western senators writing letters to the President calling for the resumption of poison use. Environmentalists thereupon persuaded twenty-two eastern senators to urge Nixon to "hang tough." He did.

But in 1974, erosion of the ban began in earnest. EPA issued "experimental use permits" for sodium cyanide, and the Department of the Interior also conducted an experimental program under the emergency provision of the executive order. Finally, in July, 1975, President Ford, responding to pressure from ranchers and a recommendation from the Domestic Council, amended the order to allow for "experimental" (rather than emergency) use of sodium cyanide, primarily in a device

known as the "toxic collar." The collar contains pockets of liquid sodium cyanide and is worn by a sacrificial lamb tethered at the periphery of the herd. Cyanide is the least objectionable of the poisons commonly used for predator control, and this method would be selective. Whether it would work remains to be seen.

Unsatisfied with this amendment and claiming "substantial new evidence," the Department of the Interior filed an application for general registration of sodium cyanide capsules for use in the M-44, a spring-loaded ejector mechanism. Use applications from several western states followed almost immediately, and hearings were called in August. At the hearings, several national environmental organizations presented a strong case that no new evidence was available which would warrant lifting the ban. In mid-September, EPA (which to its credit has directed federal poison programs since 1972, under the amended pesticide law, in a vastly more responsible manner than its predecessor, the Department of Agriculture) capitulated to political pressures and registered products containing sodium cyanide for use in predator control under a set of limited regulations. EPA was facing a pack of predators itself (and still is). The House Agriculture Committee had before it several measures that would have killed EPA's authority to regulate pesticide use effectively. Although some of these measures have been defeated, the threat is still serious.

The "poison" lobby is strong and efficient. With a gun to EPA's head through the agriculture committee and a direct line to President Ford through the Domestic Council, it has succeeded in undermining responsible public control of chemical toxicants. The ranchers even now continue to pressure bureaucrats and politicians for further concessions. The latest word is that "experimental" use of 1080 is being considered actively by the White House. Myth and emotionalism continue to reign in the politics of predator poison, to the dismay of the environmentalists and responsible ranchers alike. **SCB**

# Energy and Consumption

[In the following exchange, Martin Davenport, chairman of the Eastern Pennsylvania Group, comments on Gene Coan's recent article on conservationists and consumer groups ("Consumption and Environment," *Sierra Club Bulletin*, June/July 1975, Volume 60, Number 6). Davenport's specific focus is on the issue of higher prices for energy. Dick Tybout, chairman of the Sierra Club Economics Committee, and Carl Pope of the Sierra Club staff reply to Davenport. Lee Lane of the Public Interest Economic Center responds to Coan, Davenport, Tybout, and Pope. The Editor]

## To the editor:

Eugene Coan notes with apprehension the growing schism between the consumer and environmental movements on the central issue of energy. In the light of past communities of interest, some environmentalists still believe their goals are compatible if not identical to those of the consumer movement. They are not.

The consumer movement has focused on preventing or restricting price increases, especially for gas, electricity, and petroleum products. Although under-

standable, this interference with the economy's market-pricing mechanism is environmentally destructive when applied to irreplaceable resources, including energy. It is also economically unsound.

By artificially depressing prices, consumerism prevents the market from responding to changes in supply and demand. So what? Well, if demand exceeds supply, and the price is not allowed to rise, there is no incentive to producers to produce more, or to consumers to consume less. The result is a shortage, which grows worse the longer the artificially low price is maintained.

Let's look at a specific example — natural gas. For more than twenty years a reluctant Federal Power Commission has been legally required to regulate the price of natural gas entering interstate commerce. At the same time, a free market has existed for intrastate gas sales [sales restricted to the state that produced the gas]. In recent years, the price gap between the two has widened until today the regulated price of interstate gas is roughly seventy-five percent below the unregulated price of intrastate gas. Pre-



dictably, the bulk of newly discovered gas goes to the intrastate market. Even worse, the low price of interstate gas has stimulated the demand for it, resulting in such wasteful consumption practices as burning this premium quality fuel under utility boilers to generate steam. Meanwhile, as costs of finding gas have risen, the artificially low price has progressively discouraged the discovery and marketing of additional gas supplies. Producers just do not feel they can earn enough selling gas at regulated prices to make it worth their while to produce it. The inevitable result is a shortage.

The only way to solve the shortage is to decontrol interstate gas prices. The longer we wait, the more severe will be

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## SIERRA CLUB EXHIBITS Schedule for November/December

**ALASKA:** November 1-30; University of South Dakota, Springfield, South Dakota.

**ENVIRONMENTAL SURVIVAL:** November 1-30; Marin Co-op, Corte Madera, California.

**ENVIRONMENTAL SURVIVAL & STRIPMINING:** November 1-30; Ramay Junior High School, Fayetteville, Arkansas.

**ENVIRONMENTAL SURVIVAL & EVERGLADES:** December 1-19; Central Missouri State University, Warrensburg, Missouri.

**ESTUARY & EVERGLADES:** December 1-20; Environmental Teacher Center, Culver City, California.

**ENVIRONMENTAL SURVIVAL & STRIPMINING:** November 13; (with environmental film screen-

ing; admission fee at door); Loeb Student Center, New York University, New York City.

**ALASKA:** November 8-December 8; **STRIPMINING:** November 29-December 29; Environmental Education Office, Antioch Community College, Antioch, Illinois.

Sierra Club exhibits are available to Sierra Club groups, schools, libraries, and other organizations on request. The exhibits are exceptionally fine photo essays, including such titles as: Stripmining; Estuary; California Coastline; Slickrock; Environmental Survival; 100 Years of Photography in Yosemite; Everglades; and Alaska. For exhibit information and order forms, contact: *Sierra Club Exhibits*, 530 Bush St., San Francisco, Calif. 94108.

the adjustment from controlled to free-market prices. Five years ago, the decontrolled price might have doubled; today, it would probably triple. After a few more years, God only knows. Obviously, the initial adjustment will be painful for both space-heating and manufacturing customers, but the environmental benefits will be large and immediate: sharply lower and less wasteful consumption. The economic benefits will be an end of shortages; a gradual rise in supplies (as higher prices encourage more exploration); and, as this trend develops, a tendency for prices to drift down from their initial peaks.

But consumer interests insist that interstate gas-price controls be continued, and they even demand that intrastate gas be controlled too. Their prescription for an obviously counterproductive extension of the controls that produced the original problem will merely bring overconsumption and shortage to another segment of our economy. Environmentalists had better see through this strategy and oppose it. The fact is that consumption is the enemy of conservation. To conserve means not to consume.

We environmentalists will be well advised to use the free-market price mechanism to further our programs to the maximum degree possible. If consumerists cannot or will not, we may sympathize, but let's not make the same mistake.

Martin W. Davenport

#### Dick Tybout responds:

Martin Davenport's general points on the superiority of the price system over controls are correct, but one must also consider the extent to which competitive

markets actually exist, or can be made to exist, in the examples he uses. For instance, the MIT study on energy self-sufficiency makes the interesting argument that import quotas sold to the highest bidder by the U.S. Treasury could be used to capture from OPEC [Organization of Petroleum Exporting Countries] countries some of the profits which the latter are reaping from their monopoly position. One of the explicit rationales for price controls on natural gas has been the argument that natural gas markets were not truly competitive.

I also feel that Davenport, in saying that consumption is the enemy of conservation, is dealing only with a part, and I feel a misdirected part, of the environmental movement. Environmentalism is hardly limited to the notion of not consuming. I would cite two historic strands in the environmental movement: (1) conservation and (2) nature for nature's sake. Of the two, I think the second gives the intellectually stronger foundation for environmental policy. Man needs nature because it provides for his spiritual refreshment. He may or may not need any particular mineral deposits for any particular purpose at any particular time. The primary goal of the movement, then, should not be the conservation of such deposits.

#### Carl Pope responds:

I agree with Davenport that price is the key to reducing demand, and that energy prices have been artificially subsidized and kept low with consequences that are bad for both the environment and the economy. But the conflict between consumer groups and the environmental

movement is even more complicated.

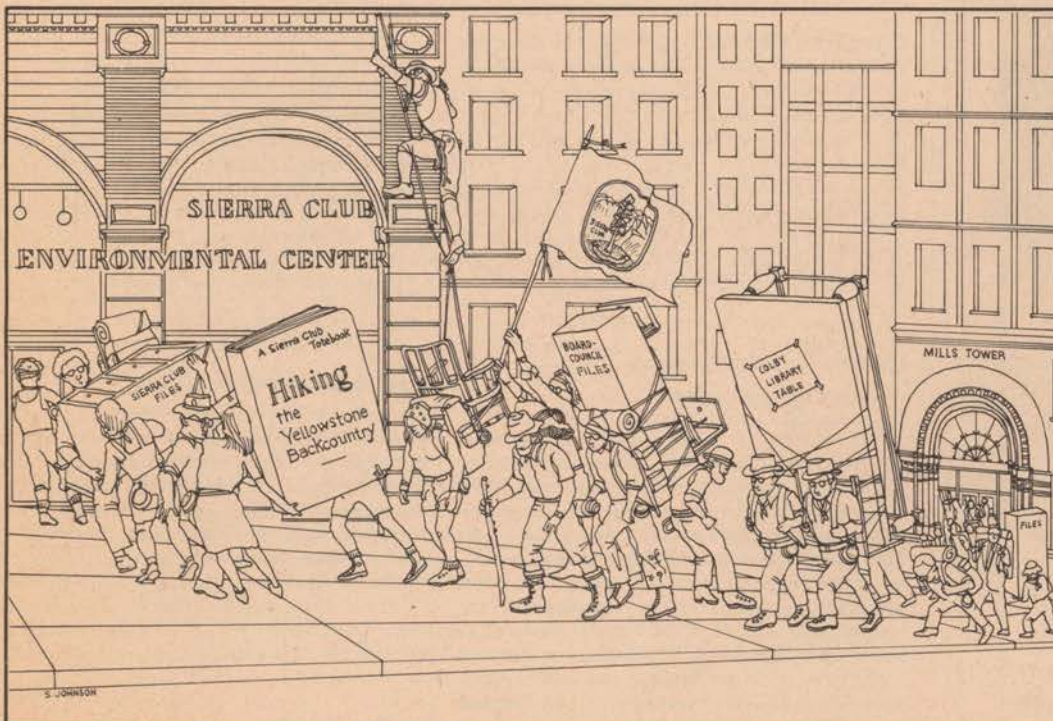
Each side has chosen to focus on a different aspect of energy prices. Conservationists rightly point out that energy consumption is encouraged through subsidies, tax breaks, and the failure to require energy producers to pay for, or prevent, the environmental damage they do. Consumer groups, also correctly, see that energy prices are kept artificially high through the monopolistic practices of energy-producing companies, and now, with the existence of OPEC, also of energy-producing countries.

It is hard to sort out these two effects, to know whether overall energy prices are too high or too low. Almost certainly, the net effect varies with different energy sources. OPEC has managed to quadruple the price of Persian Gulf oil through its monopoly. It is just as certain that the environmental and other social costs are less than this artificial price increase. Persian Gulf oil, then, as consumer groups argue, is priced artificially high. On the other hand, I would argue that nuclear energy, if we take into account all the costs and risks as well as the government subsidies, is almost certainly priced too low, as Davenport would say.

What would happen if we were to eliminate both monopolies and artificial subsidies and controls, and if energy markets were to work well? Over time, consumers would switch to forms of energy that were cheaper. The eventual price might be higher (or lower) than it is today, but the total energy mix would include substantially more Persian Gulf oil and substantially less nuclear energy.

If we cannot do anything to eliminate

Continued on page 48



## PRESIDENT'S FUND APPEAL

Dear Club Member:

The Sierra Club is on the move, on scores of environmental campaigns as well as to its new headquarters. My recent report to you outlined our opportunities and our needs for the coming year. Please review it carefully and respond as you are able. Tomorrow our land—our home—will be better for our efforts.

Kent Gill  
President

# News

## The St. Louis meeting — a summary of board actions

Among the actions taken by the Sierra Club Board of Directors at its October 11-12 meeting in St. Louis were the following:

- Proposed user charges for all publicly constructed inland waterways and urged that public-works projects be required to show that they will produce revenue sufficient to cover costs before public funds are invested in their construction.
- Opposed construction of such low-frequency submarine-communication systems, such as projects Sanguine, Seafarer, and Shelf, until the environmental problems posed by such systems are disclosed to the public, adequately studied, and resolved.
- Supported adoption of HR. 200 and S. 961, which provide for a 200-mile fisheries zone.
- Called upon the Nuclear Regulatory Commission to act to minimize the hazards posed by the widespread use of industrial, medical, and scientific radioactive materials.
- Resolved that the proposed use of radioactive materials to power cardiac pacemakers be denied.
- Ruled that the club may accept contributions up to \$20,000 from corporations, provided that no strings are attached and that there is a clear understanding of that fact; beyond that limit, acceptance would be subject to the review of the executive committee.
- Supported reservation of linear easements in Alaska along all lakes of significant size and along all streams and other waterways capable of supporting anadromous fish or use by nonmechanized watercraft, provided that use of such easements shall be limited to nonmechanized uses, except by owners of the land or others having the permission of the owners. (The board's resolution is consistent with the reservation of spot easements for mechanized travelers along both recreational and major waterways.)
- Announced that the club will participate as an accredited nongovernmental organization in Habitat: The United Nations Conference on Human Settlement.
- Rescinded a 1970 policy opposing the transplantation of the California sea otter. (Current evidence indicates that the present habitat area may be compromised by development and pollution.)

## Brant Calkin selected to fill board seat

Brant Calkin, an environmental consultant and fund raiser from Santa Fe, New Mexico, was selected by Sierra Club directors to fill a vacant post on the board. Calkin is past chairman of the Rio Grande Chapter and a former member of the Southwest Regional Conservation Committee. He has served on several state advisory councils and is a member of the National Ad Hoc Energy Committee.

## Coastal protection — Southeast

Community leaders and conservationists met in Alabama in late September to plan citizen action to speed coastal-zone-management programs in their states. Sponsored by the Sierra Club, the conference included participants from more than twenty-five environmental and citizen groups in the states of Louisiana, Mississippi, Alabama, Georgia and Florida, as well as state agencies and planning groups.

## Congaree Swamp Rally a great success

Possibly the largest gathering to date of national and state conservation leaders in South Carolina took place September 20, in Columbia. "Congaree Action Now," sponsored by the Sierra Club and local environmental groups, dramatized the need for immediate protection of the unique Congaree Swamp area, which is located nearby. (See *Sierra Club Bulletin*, February, 1975) The enthusiastic crowd, which included environmental delegations from many other southern states, heard a series of scientific experts testify that of all the southern bottomland forests, only the Congaree had a sizable remnant that could be protected. Other featured speakers included Brock Evans, Director of the Sierra Club's Washington Office, who gave the keynote address, and Ted Snyder, Sierra Club Vice President, who has been a leader for many years in the fight to save the Congaree.

## Darien Gap decision — a stunning precedent

Judge William B. Bryant of the U.S. District Court in Washington, D.C., issued an injunction in October preventing the Department of Transportation (DOT) from taking further action toward construction of the Darien Gap Highway in Panama until the department prepares an environmental-impact statement on the project. This injunction is in response to a lawsuit brought against DOT by the Sierra Club and others. It is a significant decision because for the first time a court has required an environmental-impact statement on U.S. actions solely affecting other countries.

## Park wilderness hearings

The National Parks and Recreation Subcommittee of the Senate Interior Committee scheduled hearings for November 6 on wilderness proposals for Point Reyes National Seashore, Pinnacles National Monument, Yosemite National Park, Bandelier National Monument, Badlands National Monument, Shenandoah National Park, and Isle Royal National Park. The House National Park and Recreation Subcommittee scheduled similar hearings for November 10.



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## Committee appointments

President Kent Gill recently announced the appointment of new chairmen for four national Sierra Club committees. The new committee chairmen are:

**Energy:** Ellen Winchester, Tallahassee, Florida, environmentalist currently chairing the Fossil Fuels Subcommittee.

**Labor Liaison:** Leslie Reid, Pacoima, California, machinist; past chairman of the Angeles Chapter.

**Transportation:** Christopher Wasiutynski, New York City mathematics professor; current chairman of the Northeast Regional Transportation Committee.

**Atmospheric Pollution:** Virginia Prentice, environmental scientist from Ann Arbor, Michigan; past Mackinac Chapter Chairman.

## Department of Transportation reveals national transportation policy

The national transportation policy mandated by the 1967 act creating the Department of Transportation has been unveiled at last. Transportation Secretary William T. Coleman, Jr., said that his department should give priority attention to: (1) more energy-efficient use of automobiles, (2) the financial survival of railroads and airlines, and (3) more effective urban mass transportation. He proposed that users of interstate highways and inland waterways share more of the initial capital outlays and maintenance costs of such facilities; that railroads and airlines be consolidated into viable corporations through mergers, and that government regulatory controls be revised broadly to permit freedom in setting rates and entering business.

## Action nears on clean-air amendments

After three years of work and controversy, the House Foreign and Interstate Commerce Committee and the Senate Public Works Committee are about to report their amendments to the Clean Air Act of 1970. Floor fights in both Houses can be expected on three key issues:

- Auto-emission standards. 1978 deadlines will be extended, but not for the five years requested by the administration and the auto industry.
- Stationary sources. 1975 deadlines will be extended. The crucial issue is whether sources that have not complied will be forced to pay an "excess emissions fee" in order to remove their competitive advantage over those which have.
- Significant deterioration. This will probably be the major target for attacks by industry and the administration on the proposed amendments. Environmentalists will fight to assure that the air in "clean-air" regions is kept clean, and that national parks, wilderness areas, and other critical areas are given maximum protection from air deterioration.

## California pitches in to save the redwoods

In mid-November the California Board of Forestry will hold hearings as part of a state inter-agency program, outlined recently by California Resources Secretary Claire Dedrick, giving special attention to the endangered Redwood Creek basin in Redwood National Park. The hearings will probe: (1) what specific mitigation measures should be required for logging operations in the basin, (2) whether further operations in certain specific areas should be temporarily postponed to permit recovery, and (3) what sort of long-term rehabilitative program is needed. The club supports most of the rehabilitative measures recommended.

## Coastal protection in California

On December 1, the California state legislature will receive a plan, recently completed by the California Coastal Zone Conservation Commission, designed to preserve and protect the California coastline. The plan, mandated by the Coastal Resource Protection Initiative (Proposition 20) passed in 1972, contains 162 policies that address such issues as location of future development, management and siting of energy facilities, watershed management, public access to beaches, air quality, and geologic hazards. The state legislature must now act to adopt the plan and extend the life of the coastal commission to implement it.

## Forest Service programs evaluated at hearings

Conservationists stressed the need for environmental protection in the future management of our national-forest resources at nation-wide hearings recently conducted by the U.S. Forest Service in compliance with the Resources Planning Act. At hearings in the nation's capital, Brock Evans, director of the club's Washington office, warned against a drift in Forest Service programs from multiple use to an overwhelming emphasis on timber production. At the San Francisco hearings, executive director Michael McCloskey emphasized the rapidly increasing problem of overcutting, particularly on private lands, which is creating a sharp decline in timber inventories. The club also submitted extensive written comments for the record. The Forest Service will pick a final program to set before Congress by the end of this year.



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Robert A. Irwin

*Not hostile yet, but the crowd was incensed—you felt it in your bones, you saw it with your eyes. Please, please, don't anyone come along now, recognize us, and blurt out anything about Sierra Club. The doors opened. Hundreds poured in—fired up to "get" the Sierra Club.*

Lucille Vinyard

*We have established a remarkably good relationship with officials of the Los Padres National Forest. We meet with them . . . to exchange ideas, get our questions answered, make suggestions . . . with everyone feeling free to say just what he thinks.*

Anne Van Tyne

**T**WO EXTREMES, both in the same state (California) and in the same time period (early 1975). There the similarities end. Eureka—where Lucille Vinyard, executive-committee member of the Redwood Chapter, felt terrorized—and Santa Barbara—where Anne Van Tyne's forestlands-use committee of the Los Padres Chapter has had a continuing, cordial dialogue with the U. S. Forest Service: the two cities are 650 miles apart on the California coast. Economically and environmentally they are even farther apart. Eureka is the center of the depressed redwood-logging country, where jobs-versus-environment is a "gut" issue. Prosperous Santa Barbara, on the other hand, has only its benign climate to sell. (It does, however, face problems with offshore oil.) Save for a little grazing land there are few directly exploitable resources in the surrounding national forest.

### Panic in Eureka

For weeks before a scheduled public hearing of the California Coastal Commission, the news media of the "Redwood Empire" had been setting the stage for the carnival-like, almost lynch-mob scene that prevailed in the Eureka High School

Auditorium on the night of March 12, 1975. Officially at stake was the future of the Coastal Act of 1972, which seeks to preserve the remaining scenic stretches of the California coast for public use. It was the final public hearing in the North Coast Region before the commission would make its final recommendations to the state legislature. The local economy was in a deep slump. The reason, the loggers had been told, was the new state law that required environmental-impact reports for logging on private lands. Further, the environmentalists, particularly the Sierra Club, were blamed for job losses. Angry loggers ignored the nationwide slump in the housing industry, which had sharply reduced the demand for lumber. (Last year's timber remained, still unsawed, on the decks of the region's mills.)

By the time Lucille Vinyard and her two fellow members of the Redwood Chapter's North Group arrived at the steps of the auditorium that night, the crowd was tense. The announcement of a bomb threat further increased the tension. Once inside the auditorium, there unfolded "the most incredible public hearing" she or her two companions had ever attended.

The environmentalists were jeered, booed, and hissed. The newly formed Straight Arrow Coalition (of loggers and their employers) was having its hour—putting down the supporters of the Coastal Act. . . . "We are losing our property rights." "Where are our constitutional rights?" Boo, hiss, jeer, mumble, resounding applause—that was the course of the public hearing, with little or no restraint from the chair.

After a recess, the crowd dwindled, and the wary Sierrans toyed with the idea of presenting their statement—until an independent logger named Jack Noble got up and delivered a fiery speech. Thereafter the crowd was all his, and just uttering the words "Sierra Club," according to Vinyard, could have started a riot.

Reason is slowly returning to California's "Redwood Empire"; passions have cooled; many of the loggers are back in the forests; environmentalists such as Lucille Vinyard no longer live in a state of semi-terror. Yet "Sierra Club, Take a Hike" bumper stickers are still displayed on pickups cruising along U.S. 101.

*The Sierra Club Council took some major reorganizational steps at its meeting in St. Louis. Effective May, 1976, it will meet three times a year and will be constituted only of representatives from chapters—no longer any from club committees. All but the chairman of the council's five-member executive committee will serve simultaneously as chapter representatives.*



Martin Litton

Northern Californians, of course, are not alone in their need to stand up to the environmental depredators. Determined, adversary policies and actions have been necessary in all parts of the country. Sometimes, as in Eureka, it is simply impossible to resolve differences amicably. Conservationists have to be tough-minded. Yet they must be open-minded, too, for in many instances, give-and-take dialogue has worked.

### Dialogue in Santa Barbara

The Los Padres Chapter, which is based in Santa Barbara, California, takes its name from the Coast Range's Los Padres National Forest. Since about forty percent of the chapter's geographical area lies within the national forest, it has naturally taken an active interest in the Forest Service's local management policies. Ann Van Tyne reports that in 1971 the chapter's Forest Lands Use Committee began calling on the forest supervisor and his four district rangers. Most differences of opinion between the rangers and club members were resolved satisfactorily, and a remarkably open relationship developed in the process.

In the fall of 1973, the entire committee of a dozen or so members held a get-acquainted meeting with the four rangers, who themselves then suggested that the meetings be scheduled on a regular basis. And so they have been—two or three times a year ever since. In the fall of 1974, the committee was asked for its ideas on how to involve the public in long-range planning for the forest's use. Early in 1975, it submitted its proposals, along with a timetable for implementing them. The Forest Service adopted most of the committee's ideas, including the addition of 7,000 acres to the forest's 32,000-acre wilderness study area.

### And in Texas . . .

Consultation also has proved productive for the Lone Star Chapter. In Texas, the U.S. Forest Service itself has taken a revolutionary approach in its efforts to obtain public input into its decision-making process. Last fall, on September 20-22, 1974, it met with representatives from all identifiable user groups to help prepare a management plan for the Conroe Unit of the Sam Houston National Forest.

Chapter member Paul Conn of Houston



reported on the meeting in the *Lone Star Sierran*. For the first time, he said, the Forest Service put the development of management plans in the hands of the public, not of the professionals. Each user group was organized into a team and was instructed to come up with a plan based on the data supplied by soil specialists, foresters, biologists, geologists, and others. The "experts" stood by to explain and supplement the resource data as needed by the teams.

Was the experiment a success? Conn says he was elated with its outcome—and totally exhausted. The participants had gained respect for each other and had been able to work out compromises. Each group, to the surprise of the "experts," came up with a plan, and none had any basically unsolvable issue. All plans were virtually identical. Not surprising, said Conn, for when you put all the resource information together, the best management plan becomes almost obvious. But more important, the combined judgment of the users—not the resource data alone—defined the proper balance among the uses for the forest unit. Other testimony to the technique's success is the fact that another meeting was held October 3-5, 1975, to formulate a ten-year management plan for the Sabine National Forest in East Texas.

## CHAPTER NOTES

Two chapters have gone into the T-shirt and sweatshirt business to help raise funds for their conservation programs. The ANGELES CHAPTER (2410 W. Beverly Blvd., Los Angeles, CA 90057) is offering T-shirts, with four-color Sierra Club emblems on the front, for \$4 plus shipping. The LOMA PRIETA CHAPTER (1176 Emerson St., Palo Alto, CA 94301) has long-sleeved, Sierra Club-embazoned sweatshirts at \$6 (child's size, \$4.50) plus shipping. Be sure to enclose stamped, self-addressed envelope with your inquiry.

• The FLORIDA CHAPTER marked its seventh "birthday" in August by vaulting past the 2,000-member mark to a total of 2,053 members as of August 31, 1975. At its first organizational meeting in August, 1968, its member count totaled only eighty-seven. Other Eastern chapters, too, have helped boost the club's total membership past 152,000. They generally showed the strongest growth during August, with gains of eighty-four for the ATLANTIC CHAPTER, seventy for POTOMAC, twenty-eight for LE CONTE (the Carolinas), sixty-five for NEW JERSEY, and twenty-seven for PENNSYLVANIA.

• Vigor, stamina, and the enjoyment of

mountain scenery are the qualifications for participants in the latest type of outings being run by the ANGELES CHAPTER—long-distance running. Its latest tour was on October 4th, a twenty-miler over the Santa Monica Mountains to the Pacific and back.

• One of the club's newest chapters, KANSAS (January 1, 1975), was a sponsor of the three-day Tallgrass Prairie Conference III at Elmdale, Kansas, September 12-13, 1975, to muster support for a Tallgrass Prairie National Park. Legislation for such a park finally has been introduced in Congress to set aside and protect the last remaining unbroken areas of the original, virgin tallgrass prairie. Michael McCloskey, the club's executive director, gave the keynote address to the conference.

• A regular feature in *The Ventana*, newsletter of the VENTANA CHAPTER (in the Santa Cruz-to-Carmel area of California) is its listing of new and transferred-in members of the chapter. Not only is it a friendly gesture, but it lets veteran members know who's new and provides an opportunity to welcome them and get them involved. **SCB**

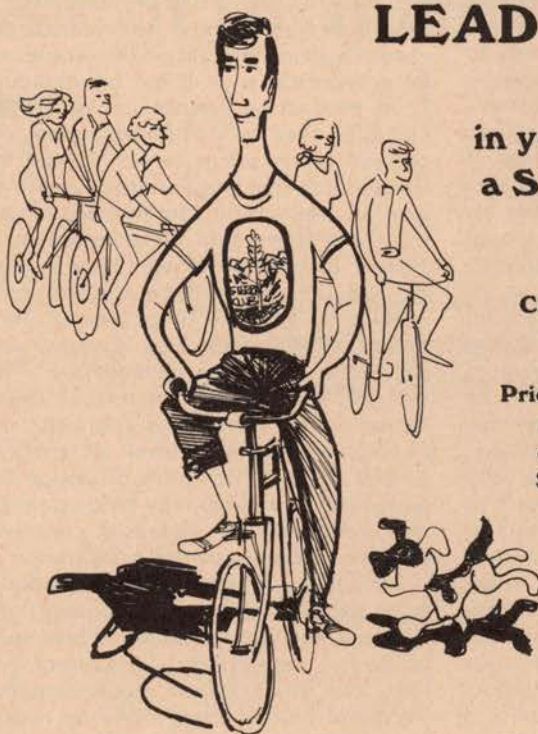
The Hoosier Chapter became the club's 49th, retroactive to October 1, 1975, by a vote of the Board of Directors on October 12th. Its more than 800 members, all in Indiana, formerly constituted the Hoosier Group of the Great Lakes Chapter, which now is restricted to the state of Illinois.

### New Address

After November, when the Sierra Club will move out of its Mills Tower headquarters, mail should go to its new address: 530 Bush Street, San Francisco, CA 94108. Note the new Zip Code. The telephone number remains the same: (415) 981-8634.

### Any Changes

Has your life been "going through changes" recently? With 152,000 names and addresses to keep in order, Member Services needs to know. If you plan to move, marry, enroll full-time in school, or have a sixtieth birthday, please tell them. To make sure your Sierra Club membership privileges continue uninterrupted, send a notice to Sierra Club Member Services, P.O. Box 7959, Rincon Annex, San Francisco, CA 94120.



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Continued from page 43

the monopoly power of OPEC and the energy companies, we should, as environmentalists, still favor doing something about the various subsidies that encourage the excessive consumption of environmentally damaging forms of energy. Since eliminating these subsidies, forcing nuclear power plants to pay for their own insurance, and so on, would increase energy prices, conservationists are put in the position of saying that current energy prices should increase.

But the proposals of the Ford Administration to increase the price of oil, proposals which have aroused the opposition of consumer groups, are *not* intended either to eliminate subsidies or internalize environmental costs. (Indeed, the President vetoed the strip-mining bill precisely because it would internalize some of the costs of coal production.) No, the administration's proposals are designed to increase the returns to energy producers; they would result in a redistribution of income from consumers to energy producers. The President's program may be summarized as follows: Maximum returns to energy producers to encourage production; energy prices as low as is compatible with the first goal in order to assure a continued market for the energy produced. Consumer groups suffer from the first goal; environmentalists, from the second.

Thus, increases in price that transfer income from consumers to producers may reduce demand (which is environmentally good), but they will also increase supply. In addition, they may further encourage environmentally and economically unsound shifts in the composition of the energy supply, such as from oil to strip-mined coal or nuclear energy, for example. In the political arena, every price increase that is designed to benefit energy producers makes it *harder* to pass environmental programs to internalize properly the external costs of energy production and consumption. Such programs would result in additional price increases that would be politically intolerable. As a result, it will be harder to regulate strip mining, defend clean-air standards, phase out fission reactors, with oil at \$12 or \$15 a barrel, than it was when oil was priced at \$5 a barrel.

It is possible, however, to reduce energy demand and raise energy prices without transferring income from consumers to energy producers. Simply tax energy, especially environmentally harmful forms of energy, and rebate the money received on a per-capita basis to individuals. This would have the effect of shifting income from those individuals and sectors of the economy who use more than the average amount of energy to those who use less and are therefore more energy efficient. It would encourage relative emphasis on the more environmentally sound forms of energy, if they were less heavily taxed. Such a program would be in the interests of consumers, who also suffer from smog, radiation hazards, oil spills, and the other external costs of energy production and consumption. It would not, it is true, provide a financial incentive to energy producers to increase their production, but the OPEC nations, with their price hikes, probably have done as much or more of that as the environment can stand.

#### Lee Lane responds:

The figures I have seen indicate North Slope and North Sea oil coming in at around \$8 to \$10 per barrel. Most other sources are well below that. I suspect that coal, even with occupational and environmental costs included, compares rather favorably with Persian Gulf oil at \$13, soon to be \$17 a barrel. It seems likely that the more expensive alternate sources currently being brought on line would not be economical were it not for monopolistic production restrictions by OPEC. Certainly, then, as Carl Pope suggests, increased energy prices cannot be justified by asserting that prices must increase to give us results more closely approximating those that could be achieved by a perfect market. Moreover, Pope's point is valid: an overall price increase does nothing to alleviate distortions in price between different energy sources, and politically may even increase the difficulty of achieving correct relative prices between such sources as coal, oil, and nuclear energy. And from an environmental point of view, this distortion between energy sources may be much more important than the increased conservation effected by an overall price rise.

I still agree, however, with Davenport's basic points that the price of energy must increase, and that consumerists are wrong to defend the current price-control system. The distributional implications of decontrol without energy-industry tax increases are highly unpalatable. A sudden phaseout is also probably undesirable.

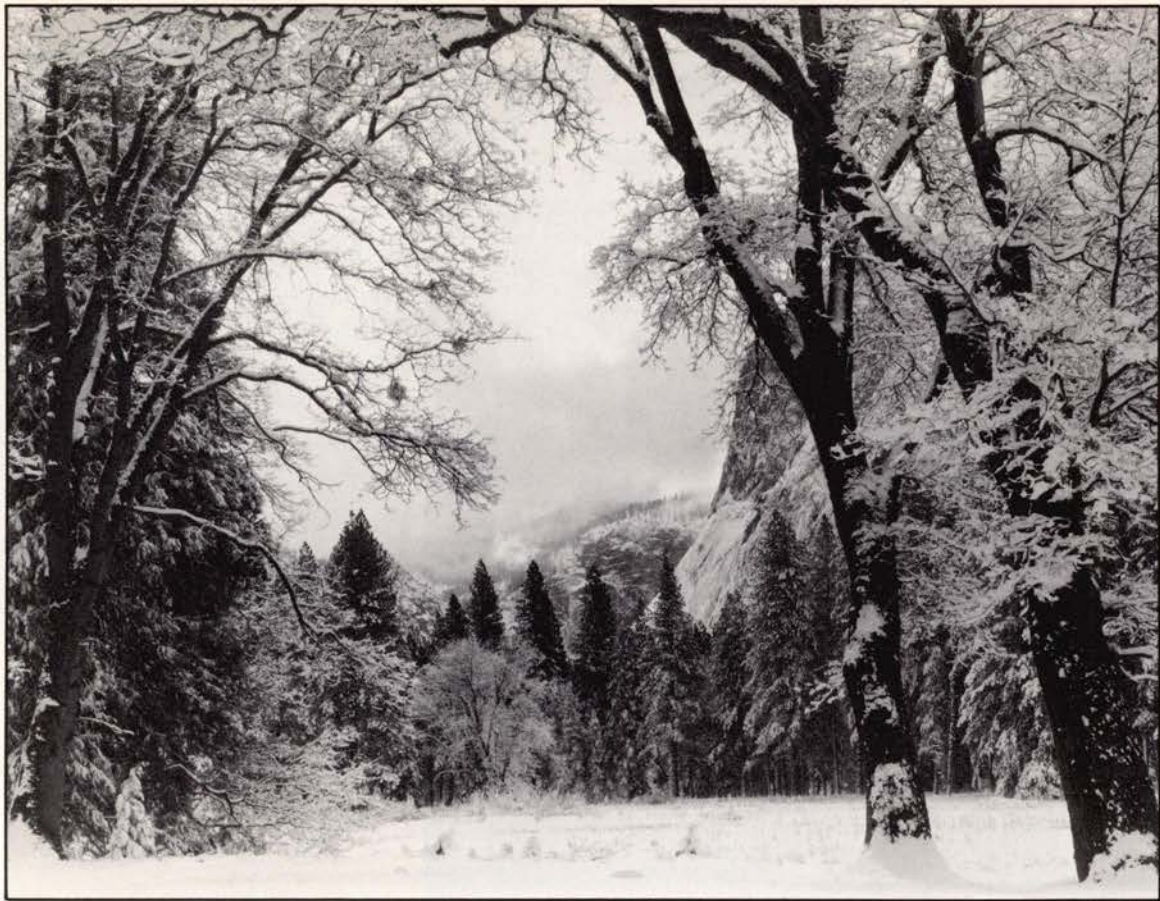
All well and good, but the chances of the outcome looking like this are very slim. One thing is evident: the current price-control system will not remain in

effect. It is too irrational to be defended logically and too offensive to the oil industry to be politically viable. The labor unions, consumer groups, the congressional Democrats who are intransigently committed to oil-price controls are nailing their colors to the mast of a rapidly sinking ship. It may or may not be good electoral politics; it is atrocious government. The current price controls diminish the incentive for overall energy conservation. They encourage producers to allow production to decline in anticipation of the higher prices after decontrol. The price differential they create could not be better designed to achieve a "drain America first" energy policy. Mere stupidity has never been enough to endanger the survival of public policy, but stupidity combined with the hostility of an enormously powerful economic interest group? It's a foregone conclusion: controls can't last.

The only real issues are who gets the money and when. The only way to get decontrol phased in, rather than with a jolt, is for the Congress to accept a share of the responsibility. To encourage this, environmentalists would have to stand up to the opposition of consumer groups, and this, as Davenport said, they have been unwilling to do.

The other issue, who gets the money, is likely to be settled in even worse fashion. The present administration proposal is to forgive excess-profits taxes on up to twenty-five percent of the profits if the industry will invest the money in energy exploration and development. At least in the Senate, this proposal is almost unstoppable. Many liberals who will oppose decontrol will support a plowback on the grounds that this will assure sufficient capital for energy production. This is a huge windfall for the energy industry. Worse, the investments it will encourage will greatly increase the economic concentration and potential for monopoly in both the petroleum industry and energy industry in general. The investments the plowback will encourage will often be ecologically very destructive. Can we convince environmentalists to fight the plowback rather than fight the specific energy-development schemes case by case? I don't know, but I am not very optimistic.

The choices the Sierra Club might actually influence—the timing of decontrol and, perhaps, the size of the plowback—are not going to produce an ideal outcome, from its perspective. Nonetheless, if environmentalists could get their act together on this issue, they might still make a useful contribution in helping to choose between the third- and fourth-best policies, even if we can't get the first or second choices. I am coming to believe this is the best we can hope for in most public-policy questions. **SCB**



Bruce Barnbaum

# O Winter, ruler of th' inverted year.

WILLIAM COWPER 1731-1800



Tim Thompson

## Comments on winter by photographers present and poets past

*I, singularly moved  
To love the lovely that are not beloved,  
Of all the Seasons, most  
Love Winter.*

COVENTRY PATMORE 1823-1896



*I love snow, and all the forms  
Of the radiant frost.*

PERCY BYSSHE SHELLEY 1792-1822

*Bruce Barnbaum*



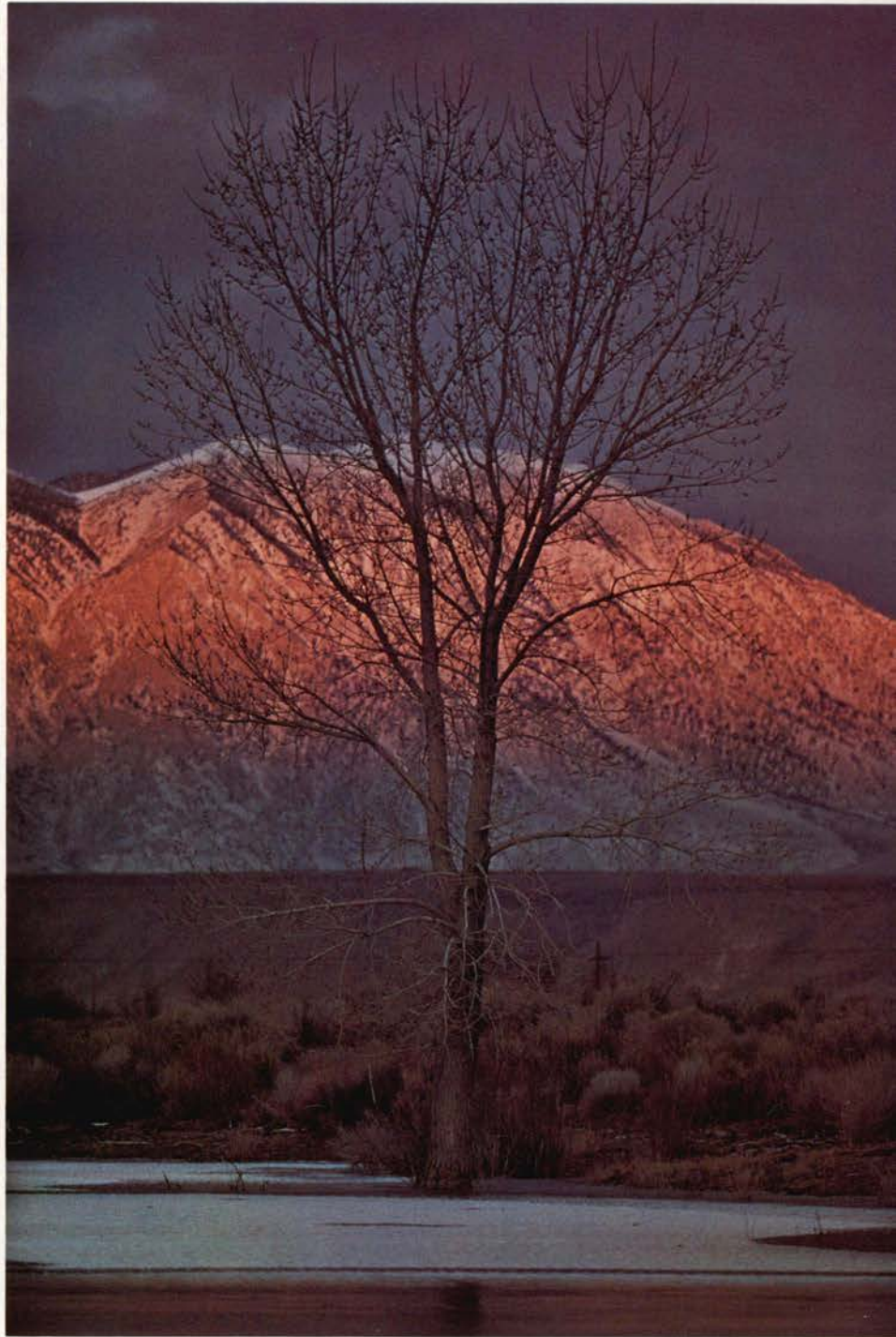


Bruce Barnbaum

*In the bleak mid-winter  
Frosty wind made moan,  
Earth stood hard as iron,  
Water like a stone;  
Snow had fallen, snow on snow,  
Snow on snow,  
In the bleak mid-winter  
Long ago.*

CHRISTINA GEORGINA ROSSETTI 1830-1894

Galen Rowell



*The frost performs its secret ministry,  
Unhelped by any wind.*

SAMUEL TAYLOR COLERIDGE 1772-1834



*Ed Cooper*

*The Worldly Hope men set their Hearts upon  
Turns Ashes – or it prospers; and anon,  
Like Snow upon the Desert's dusty Face  
Lighting a little Hour or two – is gone.*

EDWARD FITZGERALD 1809-1883



*Phillip Hyde*

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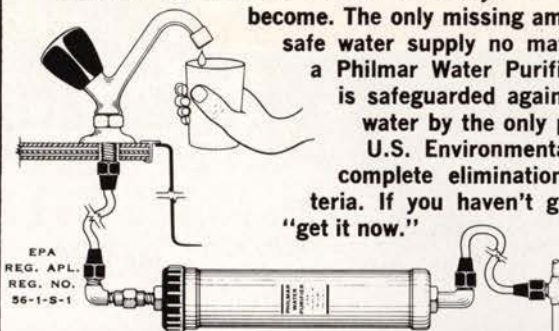
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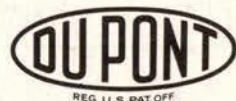
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