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High Country

news

February 4, 1985

Vol. 17 No. 2

The Paper for People who Care about the West.

\$1.00



A Navajo child born with birth defects undergoes physical therapy.

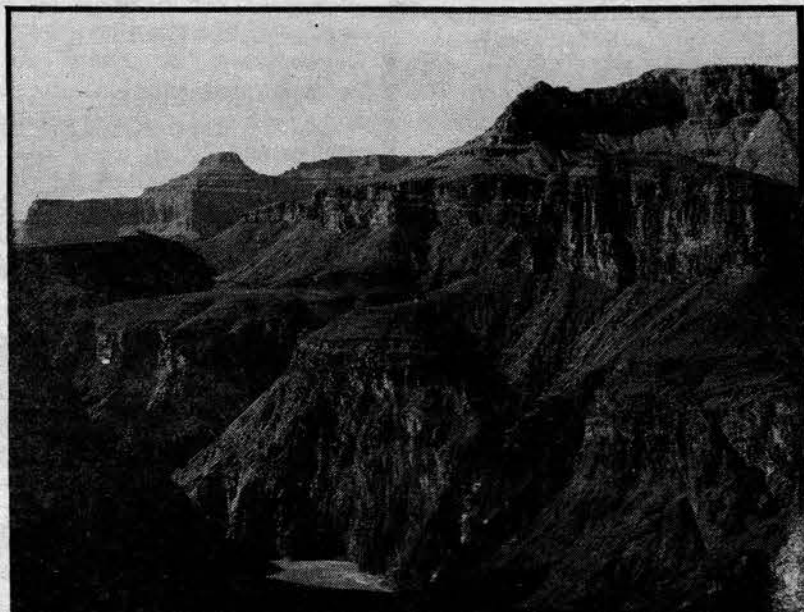
Christopher McLeod

“Down the back roads of the Navajo Nation, scientists are tracking an invisible killer which may be responsible for the maiming of hundreds of Navajo children...”

✓ See page 6

“Controversy has been triggered by Energy Fuels Nuclear’s proposal to develop the Canyon Mine 13 miles south of Grand Canyon Village...”

✓ See page 12



Inside Grand Canyon

Mary Moran

Dear friends,



High Country News

HIGH COUNTRY NEWS (ISSN/0191/5657) is published biweekly, except for one issue during August and one issue during January, by the High Country News Foundation, 124 Grand Avenue, Paonia, Colorado, 81428. Second-class postage paid at Paonia, Colorado.

POSTMASTER: Send address changes to HIGH COUNTRY NEWS, Box 1090, Paonia, CO 81428.

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Articles appearing in High Country News are indexed in Environmental Periodicals Bibliography, Environmental Studies Institute, 2074 Alameda Padre Serra, Santa Barbara, California 93103.

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Subscriptions are \$18 per year for individuals, \$25 per year for institutions. Single copies \$1.00 plus \$1.25 postage and handling.

The staff is beginning to think that the two issues we skip a year may be bad for us. Getting going after our vacations was quite a jolt. But now that we've lurched into motion, the rhythm is pleasant. Especially pleasant is the feeling of security we have from manuscripts already in house: a story and photos on the Japanese internment camp that once existed near Cody, Wyoming; a story about one professor's theory that U.S. Steel's Geneva Steel Mill in Utah, with 3,000 employees, is living on borrowed time; and an overview of the energy and industrial development in the southwest corner of Wyoming.

Also pleasant is the way in which our second attempt at crowding two interns into an already crowded office is going. The only problem has been that, in self-defense, the so-called permanent staff was forced to buy a second computer. We had been sharing one computer between circulation and several writers. Now we have two terminals. It was with a mixture of pleasure and chagrin that we discovered that our computer, worth \$4,000 or so four years ago, could be duplicated for \$700. Thus goes technology.

As we've said before, HCN's intern program is the most rewarding part of the paper for the staff. It brings new life into this small town, as well as new perspectives and extra hands and minds to share the work. This time we have been particularly fortunate.

Bruce Farling, a native of Pennsylvania and a survivor of a family with nine children, has worked as a permanent seasonal Wilderness Ranger in the Idaho/Montana Selway Bitterroot Wilderness for five years. He tells us he has three heroes: Mark Twain, Buddy Holly and the guy who started Pie Throwers Anonymous, whose name he forgets. Bruce is working on a huge special issue, whose subject we're not going to reveal. But in his spare time he has done many hotlines, bulletin boards, a roundup on water in Wyoming, and more.



Bruce Farling

Not that all is perfect with Bruce. He tends to embarrass the staff by working late. Intern Lynda Alfred has the opposite problem -- she embarrasses us by coming in at dawn. The Princeton 1983 English graduate has only three siblings, grew up near Cleveland, Ohio, has worked as a volunteer on backcountry patrol in New Mexico's Gila National Forest, and most recently was an employee at St. Martin's Press in New York City. She has done stories on gold mining in Nevada, Durango tailings, Superfund cleanups, Deeproot, and numerous hotlines and bulletin boards. The only cloud on the horizon is the future. Bruce returns to his Wilderness this summer, but Lynda is job hunting.

The trouble with good news is that sooner or later it is followed by bad news. But at least statistically, the news remains good at High Country News. The November renewal rate was 73 percent, which is stratospheric and probably can't last.

Also statistically, the High Country News Research Fund at over \$12,000 is doing well but needs to do better. So this week we send out our second appeal. We've tried to blip out the 450 people who have already contributed. But if we missed your name and you get a second letter, please understand.

This RF mailing, by the way, demonstrates that staff is not perfect. The letter went to the printer lacking a signature. So we've been unfolding, signing and refolding. We feel a little



Lynda Alfred

silly, but we'd feel sillier sending out unsigned letters. Statistically, by the way, 900 signatures an hour (no folding) is a good rate.

Another pleasing statistic: Professor Spenser Havlick at CU Boulder just enrolled a class of 63 students in the spring semester of High Country News. We welcome the new class, and hope the paper serves them well. HCN offers a subscription price of \$5 per semester when orders are received in bulk.

Subscribers got an added bonus in the mail two weeks ago: two papers. The Northern Lights Institute asked for our mailing list in order to solicit subscribers for their newsletter, and coincidentally it arrived with our January 21 paper.

The Northern Lights newspaper is edited by Dan Whipple, who was HCN's last editor, and designed by Kathy Bogan, who did that same chore for HCN until summer 1983. The Northern Lights Institute's director is Don Snow, who was HCN's Montana Bureau chief until December 1983.

The maiden issue of this 20-page tabloid has articles by Glenn Oakley, Geoff O'Gara, Tom Wolf, Marjane Ambler, Ellen Ditzler, and C.L. Rawlins, who are also HCN writers. This first issue consists mainly of feature and mood pieces, but in an introductory letter Northern Lights board-chairman Med Bennett says the paper will grow to include hard news.

--the staff

WESTERN ROUNDUP

Wyoming water makes strange bedfellows

If Mark Twain were right when he said, "Whiskey's for drinking, but water's for fighting over," then some Wyoming conservatives have chosen to drink rather than fight with the state's environmentalists.

In the past, the Wyoming Heritage Foundation has usually been at odds with conservation interests. Now a new foundation position paper, *Water Development: A Policy Analysis*, indicates that opinions are shared about the future of water development in Wyoming.

The paper questions the wisdom of planning and promoting large-scale water storage projects given a declining state economy. Warren Morton, the former Wyoming state legislator who wrote the paper, says: "Wyoming's cities should be looking at water demand in realistic terms. You have to look at today's economic trends, not the projections from the 70s that were based on coal conversion plants that haven't been built." He adds, "The state is losing population; there are now 1300 homes for sale in Casper; half are unoccupied."

As an oilman, Morton points out that the downward trend in oil prices is an indicator of economic signifi-

cance. The decline has rendered uneconomic virtually all of the coal conversion facilities that were being projected in the 1970s, he says.

Grant Parker, spokesman for the Powder River Basin Resource Council, a non-profit conservation group, says he is "gratified to hear Morton's position." He says that support for proposed projects such as the Middle Fork of the Powder River dam is the result of people stricken "with a gotta' build dams" attitude. Parker says the Middle Fork project is especially questionable because it would cost \$45 million and its immediate beneficiaries are only 15 downstream irrigators.

One critic of Morton and Parker's position is Wyoming Rep. Rory Cross, R-Natrona. He told the *Casper Star-Tribune* that some of the proposed projects are needed "because business turns away from Wyoming sites if water is not readily available, and Wyoming cities need certain water supplies that they can grow into."

Morton and Parker agree this is part of a misdirected "use it or lose it" philosophy; both point to current surpluses in state reservoirs such as Fontenelle, Buffalo Bill, Lake DeSmet,

Boysen and Yellowtail. None of this water has attracted any new industries, they say.

"Water is not a valuable industrial commodity in most of the world. And right now that is the case in Wyoming," says Morton. But he has no solution for the dilemma his state faces as downstream states clamor for water Wyoming has rights to but is neither using nor storing. Referring to Cross's criticism of the Foundation's position, Morton says, "Cross made an unfortunate mistake. He did not read my paper."

At this time the Wyoming Water Development Commission is looking at several water projects in addition to the Middle Fork dam. The projects are Deer Creek near Glenrock and Casper, Sulphur Creek near Evanston and the Little Big Horn in northeastern Wyoming, which has been nixed for now by Gov. Ed Herschler.

Parker says the Powder River Basin Resource Council could support the Deer Creek Project because there is a demonstrable need for the water. Morton, whose paper decries the value of additional storage, says he has no comments on specific projects.

--Bruce Farling

A new group focuses on an abused river

Concern about industrial and other impacts on the 250-mile-long Clark Fork River in Montana has led to the formation of a new group called the Clark Fork Coalition.

The coalition was created in January at a meeting in Missoula attended by some 60 representatives of grassroots groups and government agencies from Montana and Idaho.

During the first half of the get-together, representatives from ASARCO and the Montana Power Company outlined plans for two proposed projects that could dramatically alter the Clark Fork River in northeast Montana. Dave Suhr of ASARCO talked about the proposed \$130 million Rock Creek project, which involves mining some of the 103 million tons of copper-silver ore beneath the Cabinet Wilderness in the Kootenai National Forest.

Suhr said access to the ore would be from outside the Wilderness through a 10,000-foot buried entrance-way. The ore extraction and initial crusher would also be underground, although a flotation and concentrating process would take place in a plant outside the Wilderness. During the 30-year lifespan of the mine, Suhr said, ASARCO plans to employ up to 375 people and pump up to \$26 million into the area's economy.

More than five miles of pipe would transport waste slurry to a 638-acre tailings pond, Suhr continued. As currently proposed the tailings lake would be less than a mile from the Clark Fork River.

Coalition members pressed Suhr about hazards that could result from the mine, including seepage from the tailings pond into groundwater, and eventually, the river. Members said leaks from tailing ponds have plagued ASARCO's mine near Troy, Montana, a mine which the Rock Creek project is modeled on. Suhr said seepage would be minimal and that the "primarily sterile" tailings would contain at most traces of heavy metals, pine oil and potassium xanthate. Other issues raised by the mine at Troy are its impact on a small, threatened grizzly population and the issue of mining an orebody under existing Wilderness, under an existing Wilderness.

Bob Periman, a Montana Power Company hydroengineer, took the floor next to report on his company's plans to revamp the 78-year-old decaying dam at Milltown, five miles upriver from Missoula. Periman said the \$11.4 million project has been designed to be both cost-effective and environmentally sound. Trapped be-

hind the wooden-faced dam are decades worth of toxic heavy metals and arsenic-laden silts. The reservoir is an EPA Superfund site and has been a source of concern to downriver residents. Periman said the company chose rebuilding rather than retirement because it allows the dam to keep producing electric power and disturbs the contaminated silts least.

The coalition also discussed a third threat to the river--this one caused by the effluent from Champion International's paper mill at Frenchtown. Last April the mill was granted a temporary permit from the state to discharge treated mill wastes into the Clark Fork on a year-round basis. The issue galvanized citizens from Missoula to Lake Pend Oreille in north Idaho, for as Montana's Gov. Ted Schwinden put it, the Clark Fork "is one of the most highly damaged rivers in the state."

After Champion got its temporary permit, a two year water quality study was begun with state agencies, Champion and conservation groups taking part. Coalition members agreed that a longer, more comprehensive study was required to examine all the stresses on the river.

Because of the vast area the Coalition cares about, the group divided the river basin into four segments: the upper region of Butte to Drummond, a mid-region covering Drummond to St. Regis, a lower region from St. Regis to the Idaho border, and Lake Pend Oreille in Idaho. Each region will field three representatives for the coalition board and a 13th member will be chosen from outside the basin.

Montanan Kathy Hadley, a former bureau chief of the state's Natural Resources Department, reported that the Butte area was most concerned about the effects on the river from nineteenth century heavy metal mining operations. Some are designated for cleanup by Superfund.

Speaking for the middle region, a fisheries biologist for the Montana Department of Fish, Wildlife and Parks said that issues concerned Champion Mill's discharges, Missoula's sewage treatment plant, and a proposed seven to eight mile diversion of the Clark Fork. The diversion tunnel for mining and hydropower has the potential to dewater 25 miles of river, said biologist Dennis Workman.

ASARCO's proposed Rock Creek mine is the major issue facing the western region, said Bonnie Reishus, head of a group called the Noxon Riverwatchers. She said the Noxon



Carleen Gonder

group is lobbying for money to fund studies of the lower Clark Fork, a long neglected segment of the river. This section has three major dams within 50 miles and is essentially a river no more, she said. "It is a stagnant reservoir and a repository for everything coming down the river."

In what was called a holistic approach to water quality of the entire basin, the coalition included north Idaho on an equal footing with the Montana areas. Because the Clark Fork provides up to 95 percent of the inflow into Pend Oreille in Idaho, water pollution in Montana pollutes the lake.

Fred Runkel of the Panhandle Environmental League, a Sandpoint-based chapter of the Idaho Conservation League, presented northern Idaho's concerns. They included shoreline development on Pend Oreille, including subdivisions and a golf course. Others were a declining sport fishery and the effects of municipal sewage treatment.

Elected president of the coalition was Carleen Gonder, past president of the Montana Environmental Information Center. Vice president is Dennis Workman and secretary-treasurer is Kathy Hadley. Gonder said the new group has given itself a large task: "To monitor, protect, improve and maintain the biological health of the river." She said the group hopes to act as an information center and network on river issues.

Organizations at the first meeting included Trout Unlimited, which contributed \$200 in seed money, the Montana Wildlife Federation, League of Women Voters, Audubon and Sierra Club chapters, Northern Plains Resource Council and Montana Environmental Information Center.

--Judith Hutchins, staff

HOTLINE

Steel shot rejected

Sportsmen aren't buying a Wyoming Department of Game and Fish proposal to ban the use of lead shot in hunting waterfowl and upland game birds. Citing lack of conclusive evidence that lead poisoning from the shot is a significant problem, hunters overwhelmingly vetoed the proposal at a recent public hearing in Cheyenne. Sportsmen also said that the alternative, steel shot, is less efficient, too costly and damages shotguns. The Department floated the proposal after finding one Wyoming hunting area with a high lead pellet count and several lead-poisoned eagles and waterfowl. In addition, the Central Flyway Committee, a multi-state commission that regulates state waterfowl hunting, has indicated that without some sort of ban on lead shot, states may face a closure of all waterfowl hunting. Twenty states have restricted lead shot, and in 1986 Nebraska will be the first state to ban its use in all waterfowl hunting.

A solar lawsuit

Solar energy advocates went into U.S. district court last month to demand that the Reagan administration be held in contempt for impounding over \$40 million in solar energy and conservation subsidies.

Their claim begins a new phase of a suit filed in 1982 after the Office of Management and Budget impounded the 1982 appropriation of \$22 million for the Solar and Conservation Bank. A federal judge ordered the funds be made available to the state-administered programs within 60 to 90 days. But the OMB did not release the 1982 or the 1983 funds until last year. The current suit is in response to the OMB's recent announcement that on March 1 it would wipe out the unspent portions of the 1982 and 1983 allocations. The Solar and Conservation Bank was created in 1980 under the Carter administration as part of the Energy Securities Act. Funded by the windfall profits tax, the bank provides subsidies to middle income families who do not qualify for low-income weatherization programs.



New biking gear

Guaranteed to bring a twinge of nervousness to the Forest Service and logging companies is the February publication of an Earth First! book called *ECODEFENSE: A Field Guide to Monkeywrenching*. The book comes on the heels of a highly-publicized incident in Oregon where 63 pounds of nails were pounded into trees within a roadless-area timber sale. In the Earth First! journal, editor Dave Foreman says the guide will offer "field tested hints" for decommissioning heavy equipment, trashing billboards and pulling survey stakes. The radical environmental group's field guide so impressed author Edward Abbey that he advises in the book's foreword: "No good American should ever go into the woods again without this book and, for example, a hammer and a few pounds of 60-penny nails."

Utah plan has something for everyone

Comments are rolling in on a draft land management plan for the Wasatch-Cache National Forest in northern Utah. This landmark proposal -- the first released in Utah -- will determine usage on the Wasatch near Salt Lake City for the next 50 years and guide the remaining forest plans, all due within the year.

Its approach, says Dick Carter of the Utah Wilderness Association, is to give something to everybody. Within its three volumes, the plan includes a proposal for the Lakes Management Area, a roadless section in the western Uinta Mountains. The plan designates 59,000 acres of alpine meadows and conifer forests as semi-primitive and non-motorized and bars the area from timber harvesting and oil and gas leasing. But the proposal also opens 13,000 acres on the western end to motorbikes and the entire Lakes

roadless area to snowmobiling and helicopter skiing.

The plan notes that grazing will be "limited" to 87,000 animal unit months of sheep and cattle to protect watersheds, wildlife, and recreation. Current grazing rights amount to 77,000 AUMs. The draft plan does not discuss grazing reductions or reintroducing the Rocky Mountain bighorn sheep or timber wolf onto the north slope of the Uinta Mountains.

The management proposal outlines extensive road construction for the north slope of the Uintas. The Forest Service plans to control the mountain pine beetle by stepping up its lodgepole pine harvests in this roadless area. Their target is to cut 20 million board feet annually by 1995 and 33 mmbf by 2030, doubling the current yearly average harvest of 10 mmbf in the next 10 years.

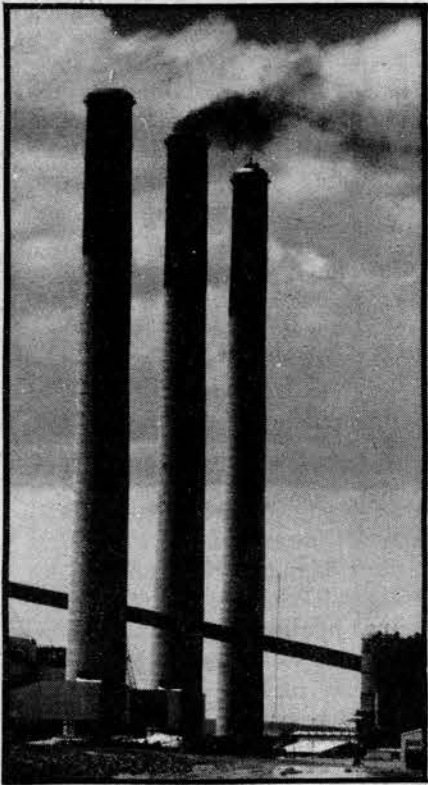
The draft plan says that all proposed sales will be below cost and says that its timber program substantially reduces the forest's present net value. According to the proposal, "Timber on this forest was not a regionally or nationally significant resource," and concludes that doubling the timber harvest will save the ecosystem.

The Utah Wilderness Act prohibits any additions to its 780,000-acre Wilderness system until a second round of forest planning in 1995. Carter says the Utah Wilderness Association and other conservation groups are pressing the Forest Service to keep development out of areas which have potential Wilderness value. Public comment on the Wasatch Forest Plan ends February 8.

--Lynda Alfred

HOTLINE

A stack of comments



Jack McLellan

Inundated by opinions, the EPA has extended the comment period on its tall stacks rule until February 25. The proposed restrictions affect electric utility power plants and smelters by limiting tall stacks as a way to disperse sulfur emissions (HCN, 11/26/84). Utilities and smelters would be forced to use alternate control techniques or switch fuel sources, either from high-to low-sulfur coal or to oil or natural gas. The coal industry charges that the Environmental Protection Agency has gone too far, and that the regulations are a back-door acid rain controls proposal. The Clean Air Coalition says the proposals are too lenient. It charges that a credit system for stack height continues to permit practices that rely on dispersion and not control of emissions.

Severing CO2

The Wyoming House of Representatives has passed a bill creating a six percent severance tax on carbon dioxide production in the state. The bill's supporters view it as an opportunity for Wyoming to reap financial benefits from the newly expanding carbon dioxide industry. Opponents say it is an after-the-fact financial burden for a company that already committed itself to purchasing the state's carbon dioxide. Chevron Corporation will foot the bill if the tax idea becomes law because the company has a contract to purchase gas from the Riley Ridge carbon dioxide project. Chevron opposes the bill.

BARBS

North Dakota's new sociological theory: Nice folks like frostbite.

In an attempt to turn lemons into lemonade, Minot, North Dakota boasts that its subzero winters "keep the riffraff out."

In this day of overblown rhetoric, it is nice to meet a man who understands the value of understatement.

Carl Bagge, the head of the National Coal Association, said recently: "What the EPA proposes to do assaults the very heart and soul of the Clean Air Act and, in the twisted way that the bureaucracy sometimes thinks and operates, it is offered as sound public policy, when in reality it is a perverse departure from reality."

Town fears it's been touched by Midas

It isn't easy living with a gold mine in town. Residents of tiny Tuscarora, Nevada, say a mining operation's noise and environmental damage disrupt their quiet lives and diminish the town's historical value.

Some 50 miles northwest of Elko, the county seat on Interstate 80, Tuscarora boasts a summer population of 40. Year-round residents total just 18. Potters, painters, and retired ranchers moved there for the high desert and clear, clean air. At 7000 feet the town sits on a rolling sagebrush hillside overlooking a large valley.

Prospectors first found gold in 1864 southwest of the present townsite. Tuscarora flourished in the 1870s, its population including over 3000 Chinese, but the town experienced the same booms and busts as mining. The Dexter Mine was the last to operate in Tuscarora, and it closed in 1916, turning Tuscarora into a ghost town. The old buildings, post office, and telephone company were purchased by newcomers decades later.

Pecos Resources, Ltd., a Vancouver, B.C.-based mining company, has resurrected the historic mine site by starting a heap leaching operation. Nevada's eminent domain law, enacted in 1875, allows mining companies to claim surface access for mining and related activities, including rights-of-way, disposal, smelters, mills, and digging. Exercising these rights, Pecos began exploratory drilling last March on the southern edge of the town.

That led Tuscarora residents to form a Property Owners' Association to preserve their quality of life and desert environment. Citizen Alert, a state-wide, grassroots political group, has taken up their cause, and some citizens have retained private lawyers. Bob Fulkerson, director of Citizen Alert, sums up their concerns: "The townspeople don't want pit-front property."

The residents are most disturbed by Pecos' plans to open pit mine an area that includes homes at the south end of the town, the historic pioneer cemetery and school house, and the "glory hole," a spring-fed swimming area.

"Pecos continues to claim they are responsible," says potter and community organizer Arnold Schraer, "but in fact, they are not."

At a meeting in early July, 1984, Pecos representatives expressed the company's commitment to the environment, pledging that they would reclaim the land to the extent that the law requires, Fulkerson recalls.



Arnold Schraer

Tuscarora graveyard



Arnold Schraer

Mining debris in town

Nevada, however, has no reclamation law for private land. In fact, citizens claim, when Pecos began moving mining equipment through the town in March, they tore up roads, broke culverts and a water line, and took over a month to repair the damage.

Pecos' Vice President Chris Armstrong says the charges made by Tuscarora residents are unfair and a "gross exaggeration." The roads are in better shape than when Pecos arrived, he says. He has assured residents that Pecos does not intend to mine the town, although the company's claim includes the southern portion.

Armstrong also says that with the "price of gold looking hard at the \$300 mark," Pecos will not extract any gold until they are sure their efforts will be profitable. They have already drilled 26,000 feet at a cost of \$1.5 million and will spend another \$1 million in hopes of defining an ore body with profitable gold-to-waste ratio. But Armstrong adds: "Tuscarora is there for one reason, and that's because the mine is there."

In early October the Nevada Division of Environmental Protection declared Pecos' activities at its Tuscarora heap leaching site an infraction of state law. Environmental Management Specialist Harry van Drielen instructed Pecos to properly dispose of the cyanide containers, to protect all chemicals from ambient weather conditions, and to fence its cyanide ponds. Van Drielen requested that the clean-up be completed "by the onset of inclement weather." And before starting leaching operations again, the state told Pecos it must secure a new permit from the Division of Environmental Protection.

So far, Pecos has not cleaned up its unfenced hazardous-waste site above a canyon strewn with empty barrels, an area where Fulkerson says he has seen deer tracks on fresh snow. On December 31, DEP Administrator Lew Dodgion issued a "cease and desist" order, legally requiring the mining company to clean up the area by April 15, 1985. It is important that the mining company adhere to the compliance schedule, Dodgion says, because it becomes more difficult to contain the chemicals once spring run-off begins.

"Mining is a resource to our state, but so are people," says Arnold Schraer. "In Nevada, communities seem scarcer than ore bodies."

One recourse for Tuscarora residents is to gain historic designation for the town. That is what citizens of Virginia City, Nevada did in 1979, by successfully lobbying to designate their town a historic district. Historic status grants the city commissioner the power to decide the extent of a mining company's rights. Virginia City residents were alarmed by Houston Oil and Mineral Co., whose operations had broken a water main and destroyed part of a highway.

Tuscarora's request for historic status, however, was rejected in late October by Elko County Commissioners. A 1979 Nevada statute declares that designation of a historic district is "not intended to discourage the exploration, development or extraction of mineral resources." The commissioners announced, however, that they would consider an application for a smaller area, and that they intended to draft an ordinance that would bond mining companies in Elko County to appropriately reclaim surface disturbances.

Pecos filed a "quiet title" suit on October 5, 1984, to determine who actually has surface rights to the property over their patented mineral claims. But with hazy or nonexistent records, the extent of Pecos' and the residents' surface ownership remains unclear. To complicate matters, Tuscarorans are currently in the midst of a lawsuit Elko County filed in the fall of 1983 to determine property boundaries. In many cases, the residents are unable to prove whether they were legally deeded their property, as no map exists from the late 19th century when the Young America Mining Company created the townsite.

Tuscarorans are on hold now, the controversy muffled under a blanket of snow. They await court action on the title claims and Pecos Resources' ventures in the spring. In the meantime, Citizen Alert has been working with state Sen. Randolph Townsend's office on legislation to limit or eradicate Nevada's "antiquated eminent domain law," says Schraer.

But mining companies have a strong voice in the Nevada legislature, says Dennis Parks, the founder and instructor of the Tuscarora Pottery School. He fears Tuscarora may become the "latest in a long series of Nevada communities facing extinction."

--Lynda Alfred

BULLETIN BOARD

NATIONAL PARK BOUNDARY VOLUNTEERS

The National Parks and Conservation Association is looking for help in analyzing national park boundaries as part of their effort to draw up the first comprehensive plan for the national park system. The group believes that the National Park Service's lack of any comprehensive plan leaves the parks "vulnerable to the whims of each passing administration," and that mounting pressures on the parks makes such a plan critical to the future of the parks. They hope their new plan, expected to take two years to formulate, will be adopted by the Park Service and Congress. Boundaries of every National Park Service area will be evaluated to determine if they're adequate to meet the area's purpose and to protect the resources preserved within the area. Recommendations for boundary changes may arise where current boundaries dissect critical ecosystems or, in cultural parks, where boundaries leave out important historical lands. Any group or individual interested in analyzing a particular park's boundary should contact Laura Loomis at 800/362-3862. Recommendations of persons who might be helpful in the analysis are also welcome.

LET'S TALK SENSE (CENTS)

The 29th annual Rocky Mountain Forest Industries Conference and Equipment Show will be at Denver's Holiday Inn February 20-22 with the focus on the economics of the industry. Speakers on Thursday, Feb. 21, will be Max Peterson, Chief of the Forest Service, giving the keynote address; James Riley of Intermountain Forestry Services and John Murphy of the General Accounting Office talking on deficit timber sales; Ed Marston of *High Country News* presenting the environmental viewpoint; David Hall, editor of the *Denver Post*, speaking for the media; Mark Pawlicki of the National Forest Products Association speaking for the timber industry; and John Combs of the Forest Service's Region I giving the agency's point of view. Friday's presentations include Tod Sedbrook of TAS Consulting on the small business set-aside program; John Gram of the Public Timber Purchaser's Group giving the Large Industry Presentation; Steve Fallon talking for the Small Sawmill Owner's Association; and Charles Fudge speaking for the U.S. Forest Service Sales Group. For information, write Conference Coordinator, 1985 Mountain Forest Industries, Colorado State Forest Service, CSU, Fort Collins, CO 80523, or call 303/491-6303.

NEW NEWSPAPER EMERGES

The Selkirk-Cabinet intermountain region in the Idaho Panhandle gained a newspaper with an alternative voice in late December. Each week the *Intermountain Post*, so far a 12-page tabloid, presents major news and issues affecting the area, as well as forest product reports, literary and artistic works and a calendar of events. Publisher David Boswell says the *Intermountain Post* will adhere to the "highest possible standards of graphic and literary excellence." For a subscription or more information, write to the newspaper at Box 1330, Priest River, Idaho 83856 or call 208/448-2841 or 448-2545.

GREAT BASIN TREES

Ronald M. Lanner's *Trees of the Great Basin* is the first in an ambitious series published by a university press, thanks to a grant from the Max C. Fleischman Foundation. More than a field guide, this handsome book describes the environment in which aspen, juniper and 45 other native species flourish. That environment is the mountains that emerge from the deserts of Nevada and parts of Oregon, Idaho, Utah and California. Lanner also touches briefly on threats to the area's trees, such as the singleleaf pinon which has been targeted by the Bureau of Land Management and Forest Service for "chaining." Chaining uproots pinon so that federal agencies can replace the trees with crested wheat grass, which adds acreage for cattle grazing. Lanner writes in succinct and sometimes elegant style; the drawings by Christine Rasmuss are excellent.

University of Nevada Press, Reno, NV 89557. Hardcover \$19.50. 215 pages, illustrated, with color plates.

SOLAR THERMAL REVIEW

Industrialists, academics, and outside researchers will meet later this month to discuss and publicize solar thermal research gains and ideas for the future. The Solar Thermal Program Annual Review will be sponsored by Golden, Colorado's Solar Energy Research Institute on Feb. 20-22. For more information, call Kate Blattenbauer at 303/231-7375.



MANAGING GRAND CANYON WILDS

Grand Canyon National Park's Backcountry Management Plan is under review. The plan went into effect in October of 1983 with the goals of promoting backcountry recreation for the greatest number of visitors compatible with visitor safety and preserving the natural ecosystem and cultural resources of the park. A public meeting on the plan is set for Feb. 14 at the Bureau of Land Management State Director's Office, 3707 North 7th Street in Phoenix. The meeting will start at 7 p.m. and continue until all comments are presented. The Park Service will also take written comments until March 18. Send comments or requests for copies of the plan to the Grand Canyon National Park Backcountry Reservations Office, P.O. Box 129, Grand Canyon, AZ 86023 (602/638-2474).

A DAM DRAMA IMMORTALIZED

"Challenge at Glen Canyon" is the Bureau of Reclamation's new motion picture documenting the 1983-1984 floods on the Colorado River, the damage to Glen Canyon Dam's spillways, and the subsequent repairs and testing of the left spillway. The Bureau says "even viewers totally unacquainted with dam construction can sense the drama of such a huge undertaking and the ordeal of the people involved.... The show is not about just concrete, rock and steel; but rather about concerned men and women; about specialists who planned the repair and designed the air slots; about hundreds of workers who labored long hours to finish the job on time." BuRec will lend you the 27-minute film for free; it's available in regular 1/4 inch videotape, 1/2 inch Beta or VHS videotape and 16 mm film. Contact the Upper Colorado Region, BuRec, P.O. Box 11568, Salt Lake City, UT 84147 (801/524-6479).

WILDLIFE AND NATURAL RESOURCES MEETING

The 50th North American Wildlife and Natural Resources Conference will be held in Washington, D.C.'s Shoreham Hotel during the closing days of winter. The Wildlife Management Institute sponsors the event, with a theme this year of "Taking Stock: Resource Management in the 50th Year." Speakers in the March 18-20 sessions will include state and federal wildlife resource managers, academics, and conservation organization and industry spokesmen. Robert Stafford, R-Vt., chairman of the U.S. Senate Environment and Public Works Committee and John D. Breaux, D-La., chairman of the U.S. House Subcommittee on Fisheries and Wildlife Conservation and the Environment will also speak. Numerous organizations will meet in the days preceding as well as during the main sessions. The range includes the Wildlife Society, Defenders of Wildlife, the Whooping Crane Conservation Association and the National Rifle Association. Registration for the conference is \$30 or \$15 for students. Contact the Wildlife Management Institute, 1101 14th St. NW, Suite 725, Washington, D.C. 20005.

PROTECTING FARMLAND

The American Farmland Trust has released a study that advocates revamping government farm policy. The report, "Future Policy Directions for American Agriculture," suggests that Congress and the Agriculture Department provide for a better mix of commodity and conservation policies based on protection of soil, water and the farmer's investment. The Trust, a national non-profit organization devoted to preserving prime farmland and conserving soil resources, outlines its primary concerns while detailing options for correcting problems. A copy is \$5 from the American Farmland Trust, 1717 Massachusetts Avenue NW, Washington, D.C. 20036.

BARBED WIRE

Why not pass a law making umbrellas illegal for civilians?

The military is caught between a wet and a dry place. On the one hand, the top Army brass thinks "walking around with umbrellas is somehow intrinsically unmilitary," so they've banned them. On the other hand, an officer at the Pentagon said, anonymously, that he felt silly "getting rain down my neck when the guy next to me is carrying an umbrella."

Kudos to the Denver Post for tough-minded investigative reporting.

In a front page story January 24, *Post* reporter Neil Westergard revealed that Colorado Governor Richard Lamm's 15-year-old daughter Heather received \$78 over two months for doing lawn work and for working in the kitchen during official receptions at the Governor's mansion. The story probed the question: Is Lamm using state money to pay his daughter's allowance?

An insidious new commie secret weapon.

A low bid by a Yugoslavian firm to supply mountaineering skis to the U.S. Army has led Congressman Mike Strang, R-Co., to charge that the communist government was attempting to destabilize the ski market in the U.S. Strang also told the *Denver Post* that Yugoslavia could theoretically build electronic tracking devices into the skis, making it possible to keep our troops under satellite surveillance. Yugoslavia took the contract from an Aspen firm by bidding \$452,000 lower for 11,600 pairs of skis.

A tough, tough body.

Retiring members of Congress who were elected before 1980 may take with them any unspent campaign funds. But if they do, the U.S. Senate may choose to yank such post-retirement privileges as working out in the Senate gym and eating in the Senate cafeteria.



IDAHO GRASSHOPPERS AND FARMS

Idaho's two U.S. senators are planning meetings throughout the state to discuss funding for grasshopper control and upcoming federal farm legislation. Representatives from the Bureau of Land Management and the U.S. Agriculture Department Animal and Plant Health Inspection Service will be at the two grasshopper meetings. The senators also want comment on the upcoming 1985 Farm Bill -- legislation that will replace the expiring Agriculture and Food Act of 1981. In formulating such a bill, the degree of government involvement in the nation's agriculture industry is the biggest issue to be addressed. Following are the meeting locations and dates:

•Spalding Auditorium, Lewis-Clark State College, Lewiston, ID, Feb. 9, 1-3 p.m.

•Caldwell City Hall, Caldwell, ID, Feb. 11, 2-4 p.m.; grasshopper meeting 1-2 p.m., same location.

•Educational Bldg. Auditorium, Idaho State University, Pocatello, ID, Feb. 14, 2-4 p.m.; grasshopper meeting, 1-2 p.m., same location.

•Vo-Tech Bldg., Room 108, College of Southern Idaho, Twin Falls, ID, Feb. 15, 2-4 p.m.

CLUB 20 MEETING

Club 20, Western Colorado's promotional organization, holds its 32nd annual meeting this month in Grand Junction. Talks and workshops will focus on strengthening and promoting local communities and agriculture. The setting will be Grand Junction's Holiday Inn on the afternoon of Friday, Feb. 8 and all day Saturday the 9th. Western Colorado's new congressman, Republican Mike Strang, will be the featured banquet speaker Saturday night. Registration is \$35 per person or \$60 per couple. Contact Club 20, P.O. Box 550, Grand Junction CO 81502 (303/242-3264).

THE FUTURE OF ELECTRIC POWER

If you're interested in whatever consensus is possible on the fate of the electric power industry, you might read the summary report of a symposium held in fall 1983 at Sundance, Utah, under the auspices of Robert Redford's Institute for Resource Management. The mix of industry, environmental and academic types assembled guaranteed a non-radical result. But the 26-page, slickly-produced report shows that the utility industry recognizes that its days of business as usual are over. Nuclear energy, the report says, is a national disappointment, alternative energy has a definite role to play, electric growth is declining, utilities are still regulated but no longer have monopolies, and utilities need to restore public trust. Copies can be had by writing: Institute of Resource Management, 19 Exchange Place, Salt Lake City, UT 84111.

The next improvement will come from tearing up the tracks.

The Union Pacific Railroad in Idaho says that freight shipping service would be improved by closing eight branch stations in eastern Idaho because the railroad would use the savings to give better computerized service at the two surviving stations.

And here we thought PACs were organized to buy the government.

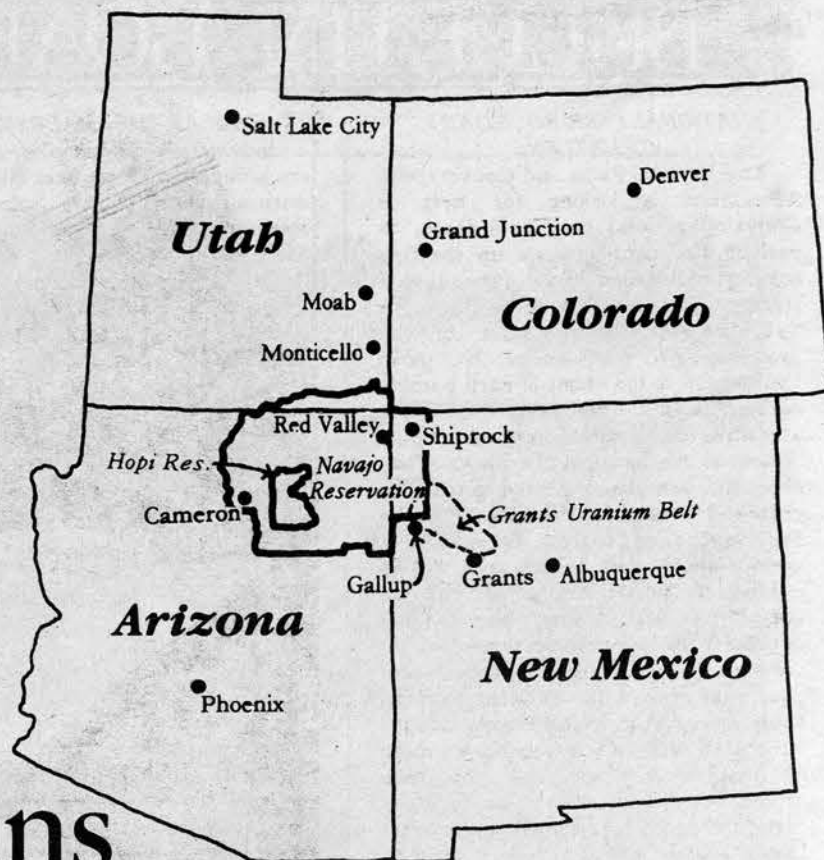
The National Conservative Political Action Committee has contributed \$100,000 to Senator Jesse Helms' effort to take over CBS. Helms charges the network with a liberal bias.

Nor do you keep driving your smashed 1983 car.

A Union Carbide spokesman said: "You don't go back to driving a 1925 car just because your 1983 car has smashed up." This, he said, explains why the Bhopal, India, manufacturing process that killed several thousand people is still a good idea.

6-High Country News -- February 4, 1985

Uranium mines and mills may have caused birth defects among Navajo Indians



by Christopher McLeod

Down the dusty back roads of the Navajo Nation, scientists are tracking an invisible killer which may be responsible for the maiming of hundreds of Navajo children. Though the identity of the culprit is still a mystery, the scientists have gathered compelling evidence that implicates not a person but an industry: uranium mining and milling.

Numerous scientific studies have shown that radiation given off by uranium ore is deadly -- hundreds of Navajo, white and Hispanic uranium miners have died from lung cancer contracted in the poorly ventilated uranium mines of the 1950s and 60s. Now, a search of over 13,000 birth records in Shiprock, New Mexico, has revealed that a wide range of severe birth defects occur two to eight times more frequently among Navajos living in America's oldest uranium mining district than they do in the rest of the nation.

In 1980, the March of Dimes funded an investigation into possible links between radiation given off by uranium mining and milling, and the high rates of birth defects, stillbirths and miscarriages that plague the Navajos of northwest New Mexico.

The March of Dimes study is being conducted under the leadership of biologist Lora Shields. Working with a team of outside scientists, Navajo community health workers, researchers and field personnel, Dr. Shields is conducting the most extensive and perhaps the most important study ever done on the effects of radiation on human reproduction. The results of Dr. Shields' study promise to have profound significance in the ongoing debates about the reproductive effects of low-level radiation and the impact of energy development on the health of Indian people.

With the birth defect study more than halfway complete, Dr. Shields reported at the American Academy for the Advancement of Science's annual meeting last year that "certain severe anomalies were significantly higher... during the 11-year period 1964-74." Dr. Shields identified a total of 325 severe birth defects which occurred during that time -- an alarmingly high number for a population the size of Shiprock's (6,000 Navajo families live in the Shiprock area).

The severe defects documented by

Dr. Shields include: 32 cleft palates or cleft lips, 38 cases of hip dysplasia, 26 club feet, 12 cases of Down's syndrome, 20 hydrocephaly (fluid on the brain which causes brain damage), 11 microcephaly (abnormally small head and brain), 7 anencephaly (a portion of the brain fails to develop) and 6 cases of microtia syndrome (an ear defect).

In addition, stillbirths and infant deaths before the age of one year were abnormally high before 1975.

Also significant is the fact that the number of birth defects started to drop in 1975. This could indicate an environmental fact which changed around 1974, says Dr. Shields.

Having documented the high rates of reproductive disorders, Dr. Shields is now attempting to establish whether the problem can be linked to radiation released by uranium mining and milling. Because any association between radiation and birth anomalies will be applicable worldwide, says Dr. Shields, "We're not reaching any conclusions until the study is complete."

Uranium was discovered in New Mexico in 1952 by Paddy Martinez, a Navajo shepherd. His discovery triggered the biggest prospecting boom since the California Gold Rush in the rolling desert between Grants and Shiprock. At first, New Mexico's uranium was used by the Atomic Energy Commission to manufacture atom bombs. In later years, the radioactive uranium was used to make fuel rods for nuclear reactors.

In the northeast corner of the Navajo Reservation, in a remote sandstone canyon known as Red Rock, rich uranium ore was tapped by local Navajos working under contract with either the AEC or mining companies such as the Vanadium Corporation of America. The miners toiled in hot, dusty shafts called "dogholes." The dogholes were unventilated, and the thirsty workers often drank the murky water that formed pools on the floor of the mines.

The men had no idea what they were mining or what it was used for. The Navajo language has no word for that invisible, tasteless phantom that white men call "radiation," and like most of the rest of America in the 1950s, the miners probably wouldn't

have cared much if they'd known what it was. Uranium mining was a paying job, and that was all that mattered.

From Red Rock, uranium ore was trucked to a mill in the middle of Shiprock, 30 miles to the east. At the mill, which was owned and operated by Kerr McGee, the ore was crushed and mixed with chemicals. The pure uranium, called yellowcake, was shipped to enrichment plants and then to bomb assembly factories. The tons of sand-like waste generated at the mill, containing 85 percent of the radioactivity of the original uranium ore (in the form of radium and thorium), was dumped in a pile next to the mill, on the banks of the San Juan River. Over the years the Shiprock tailings pile emitted significant levels of radioactive radon gas as it grew to 1.7 million tons covering 72 acres. In 1974, the pile was covered with dirt because of increasing concerns about the health effects of radiation. But tons of the radioactive waste had already been washed or blown away. The Department of Energy estimates that 220 acres around the old mill site are contaminated.

A similar scenario was enacted at three other sites on the Navajo Reservation and at numerous locations throughout the Colorado Plateau region. Mills in Durango and Grand Junction, Colorado, Monticello, Utah, and Riverton, Wyoming, dumped millions of tons of radioactive tailings on the banks of the Colorado River and its tributaries. After the government had stockpiled enough uranium for its nuclear weapons program, the old mills were shut down and abandoned, leaving 22 million tons of tailings at 24 locations in nine Western states. (See accompanying story.)

In the early 1970s, with the nuclear industry's failure to meet its own over-inflated growth estimates, the uranium industry began to falter throughout the West, and many more mines and mills were shut down. Meanwhile, evidence linking uranium mining with lung cancer fueled a growing controversy over the health effects of radiation.

It was in the late 70s that community-health workers and midwives in the Shiprock Hospital began to notice that women were bearing children with alarmingly high numbers of birth defects. They

also saw children suffering from learning disabilities and women suffering from a wide range of reproductive disorders, including miscarriages.

A preliminary study of 49 Navajo families in the Red Rock uranium mining district revealed a two-fold excess of miscarriages, infant deaths, congenital and genetic abnormalities, and learning disabilities compared to national rates. There were indications that these disorders were higher among the offspring of the miners who had worked in the unventilated uranium mines of the 50s and 60s.

In 1980, the March of Dimes was asked to fund a study of the problem by Dr. Alan Goodman, a physiologist who works as a consultant to the Arizona Department of Health Services, Lynda Taylor, director of the radiation and health program at Southwest Research and Information Center in Albuquerque, and Lynn Olcott, then coordinator of Human Services for handicapped Navajo children.

The March of Dimes granted \$50,000 and Dr. Shields agreed to direct the study. Dr. Shields had spent several years studying the effects of radiation from atom bomb tests on vegetation at the Nevada Test Site, and for 20 years was chairman of the biology department at New Mexico



Dr. Laura Shields

John Blecca, March of Dimes



Christopher McLeod

Interview with Red Valley widow for March of Dimes study

Highlands University in Las Vegas, New Mexico.

As a working hypothesis because of the unusually high number of radioactive exposure sources in the Shiprock area, Dr. Shields and other researchers questioned whether radiation might be the cause of the high number of reproductive problems.

The Shiprock mill tailings pile is in the heart of town, within a mile of a housing development and the high school. For several years, the tailings mound was used as a place to train heavy equipment operators. They would practice moving the tailings around with bulldozers. In 1980, when the old mill was dismantled, Navajo workers discovered \$100,000 worth of radioactive yellowcake between the layers of the roof. Researchers surmised that radioactive dust levels in and around the mill must have been very high when milling occurred during 1954-1968.

Radioactive rocks from uranium mines were widely used in the construction of homes and hogans. Twenty-five homes in the Red Rock area (which has been re-named Red Valley) have recently been decontaminated or reconstructed because of high radon levels.

Of greatest concern to public health officials, however, were the 200 abandoned uranium mines in the hills around Shiprock. These small mines remain open and accessible.

"The mines have been abandoned exactly as they were when mining ceased," says Helene Hanson, a Public Health Service nurse in Shiprock. "As a result, a highly radioactive area exists near all of the mines. There is evidence that shepherders go into the mines in the winter to get out of the cold, and in the summer to escape the heat. Evidence of fires, pop cans, toys, and animal and human tracks have all been observed near the mines. In addition, runoff of snow and rain from the radioactive waste piles has contaminated several streams and water wells. The radioactive water from the streams is used to irrigate summer crops. The animals drink from these streams. No studies have been done on the animals or the crops," she says.

In addition to these local sources of radiation, Navajos are exposed to wind-blown tailings from the uranium mills of the nearby Ambrosia Lake

area. According to a 1979 Public Health Service report, "Tailings... are blown across a portion of the Navajo Reservation during high prevailing southwest winds. These dust particles are carried to altitudes in excess of 15,000 feet and fall out over a wide area, adding to normal ground radiation."

"These people have been exposed to very high levels of radiation," says Dr. Shields. "Our task is to find out whether these birth anomalies are related to that radiation."

The first step in the study was an exhaustive search through all Navajo birth records at Shiprock Hospital during the 18-year period of 1964-81. After examining 13,329 births, Dr. Shields identified over 325 anomalies and malformations. In addition to the findings detailed above, another significant discovery was that 122 women had given birth to two abnormal infants each and 16 women had each suffered three reproductive disorders.

Curiously, all of the high anomaly rates began "an abrupt, dramatic shift

towards normal starting in 1975," though most of the numbers were still high during the years after 1975, Dr. Shields says.

What happened in 1974 that might have caused a sharp drop in birth defect rates? Dr. Shields has identified the following possibilities, all of which occurred in 1974:

- The covering of the Shiprock tailings pile, which reduced radioactive emissions from the pile by 90 percent;

- The closing of a Fairchild

(Continued on page 10)

Is one radiation death per 1,000 people acceptable?

The Department of Energy is currently conducting a \$524 million, seven-year remedial action program to clean up the 22 million tons of abandoned uranium mill tailings and the 8,000 contaminated properties that are scattered throughout the West.

In Grand Junction, for example, where 6,800 of the contaminated properties are located, DOE and the Colorado Health Department have cleaned up 500 structures over the past nine years at a cost to the taxpayers of \$10 million.

Meanwhile, it is the Environmental Protection Agency that must set the standards for DOE's tailings clean-up, and issue regulations governing the release of radiation from operating uranium mines and mills.

Ironically, as evidence linking adverse health effects to uranium mining and milling grows more convincing, EPA regulation of the financially troubled uranium industry has been weakened. In the last two years, the Reagan administration has decided to drastically weaken regulations proposed under the Carter EPA to limit radiation emissions from operating uranium mills. The EPA has also eased standards governing the cleanup of abandoned tailings in comparison to the draft regulations proposed in 1980. The new regulations will allow radon emissions 10 times higher than originally recommended, and will require that disposal methods be effective for only 200 years, rather than the 1000 years originally

proposed. (Tailings are hazardous for 100,000 years, according to EPA.)

The new EPA regulations have drawn lawsuits both from environmental groups, which charge they are too weak, and from the uranium industry, which charges that they are too strict.

In a related development, the EPA last October withdrew its new proposed standards to limit the emission of radon gas from uranium mines. On December 11, in response to a Sierra Club lawsuit, a federal judge in San Francisco found EPA Administrator William Ruckelshaus in contempt of court for failing to issue the radon regulations. The judge ordered the EPA either to issue the standards by April or demonstrate that the emissions are not a health risk.

The key question in all of this is what level of exposure to radiation from uranium mining and milling will result in unacceptable health impacts? And who defines what is acceptable? In its new standards for radioactive emissions from active uranium mills, EPA has established an acceptable "residual risk" of contracting lung cancer at one in 1,000 for people living near tailings piles. So one of every 1,000 people living near a uranium mill can expect to die of lung cancer caused by radioactive emissions from the mill tailings.

"EPA adopted standards for the control of tailings that establish the highest residual risk of any pollutant ever regulated by the agency," says

Lynda Taylor of Southwest Research and Information Center. According to Taylor, EPA previously set acceptable risk levels at one death per 100,000 or one per million.

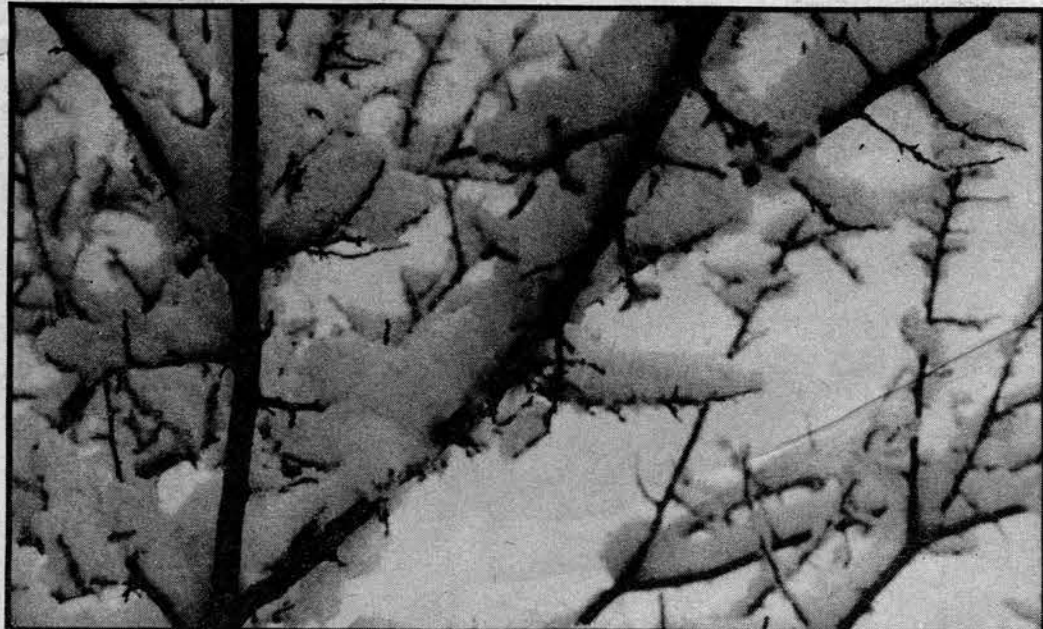
An unnamed EPA official told the *New York Times* in September 1983 that the new EPA approach to uranium tailings could result in sparsely populated areas of the West becoming "risk dumps" where higher exposure to hazardous substances is permitted because fewer people are exposed.

In a letter to EPA Administrator Ruckelshaus, New Mexico Governor Toney Anaya protested, "We cannot accept EPA's estimated risk of one in 1,000 for lung cancer mortality incurred by a member of the general public exposed to current radon limits.... This risk is unacceptable."

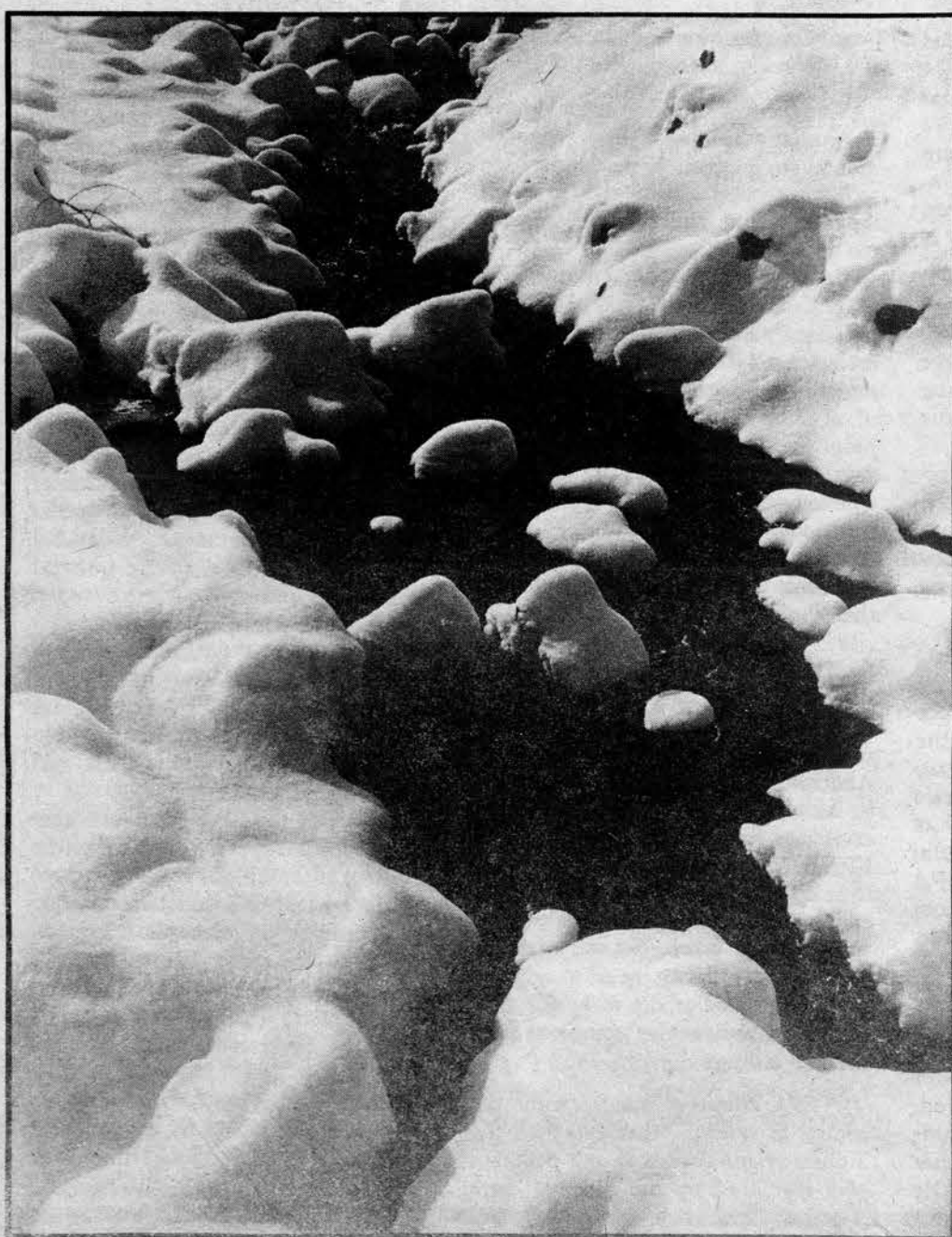
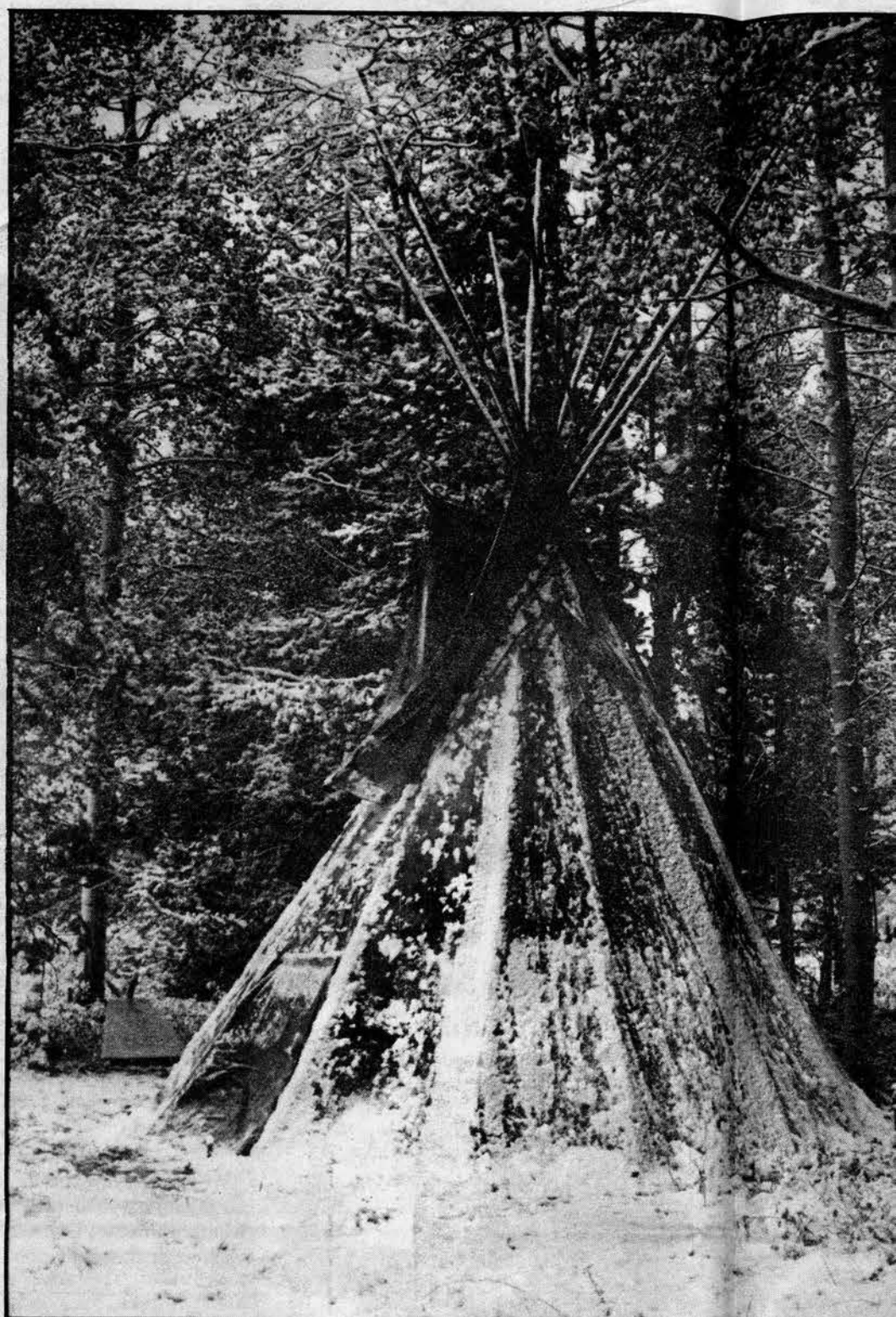
Bob Yuhnke of the Environmental Defense Fund says, "Setting a public health standard at this level of risk effectively legalizes death by radiation rather than a standard which will protect public health."

Critics of the EPA point out that the agency is supposed to protect the health of all Americans equally, and to regulate hazardous substances without considering economic impact. Lynda Taylor asks: "How can we expect EPA to issue strong regulations for an industry which has had intimate ties to the government since the birth of the Atomic Age?" She adds that the uranium industry -- despite an estimated \$40 billion in government subsidies -- is in a prolonged decline.

--Christopher McLeod

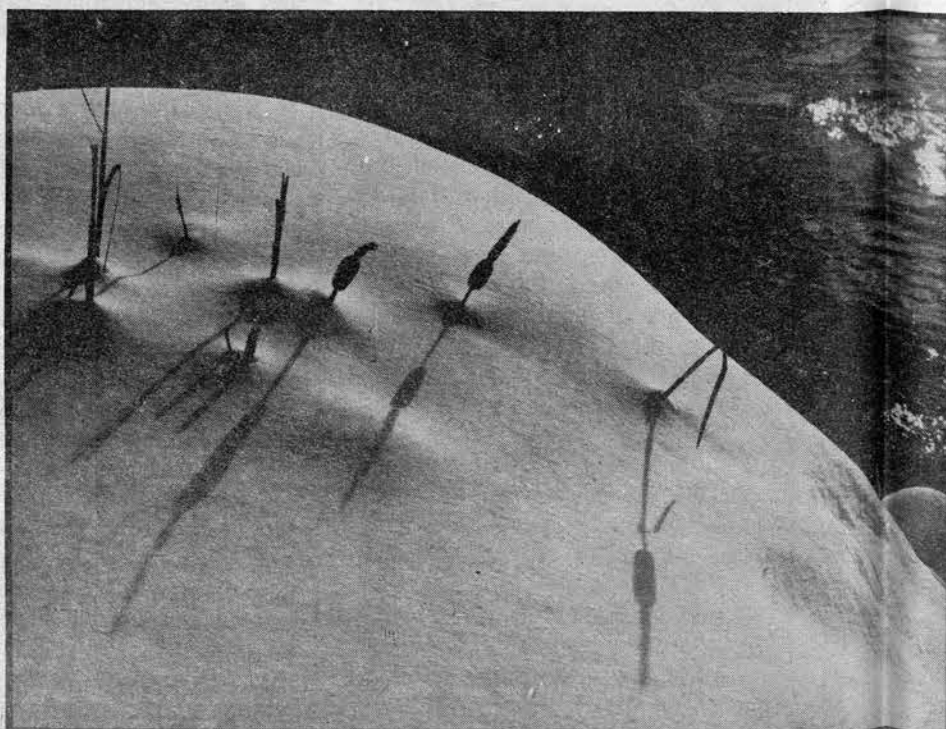


Yellowstone Park Photo



David Sumner

Variations on a theme

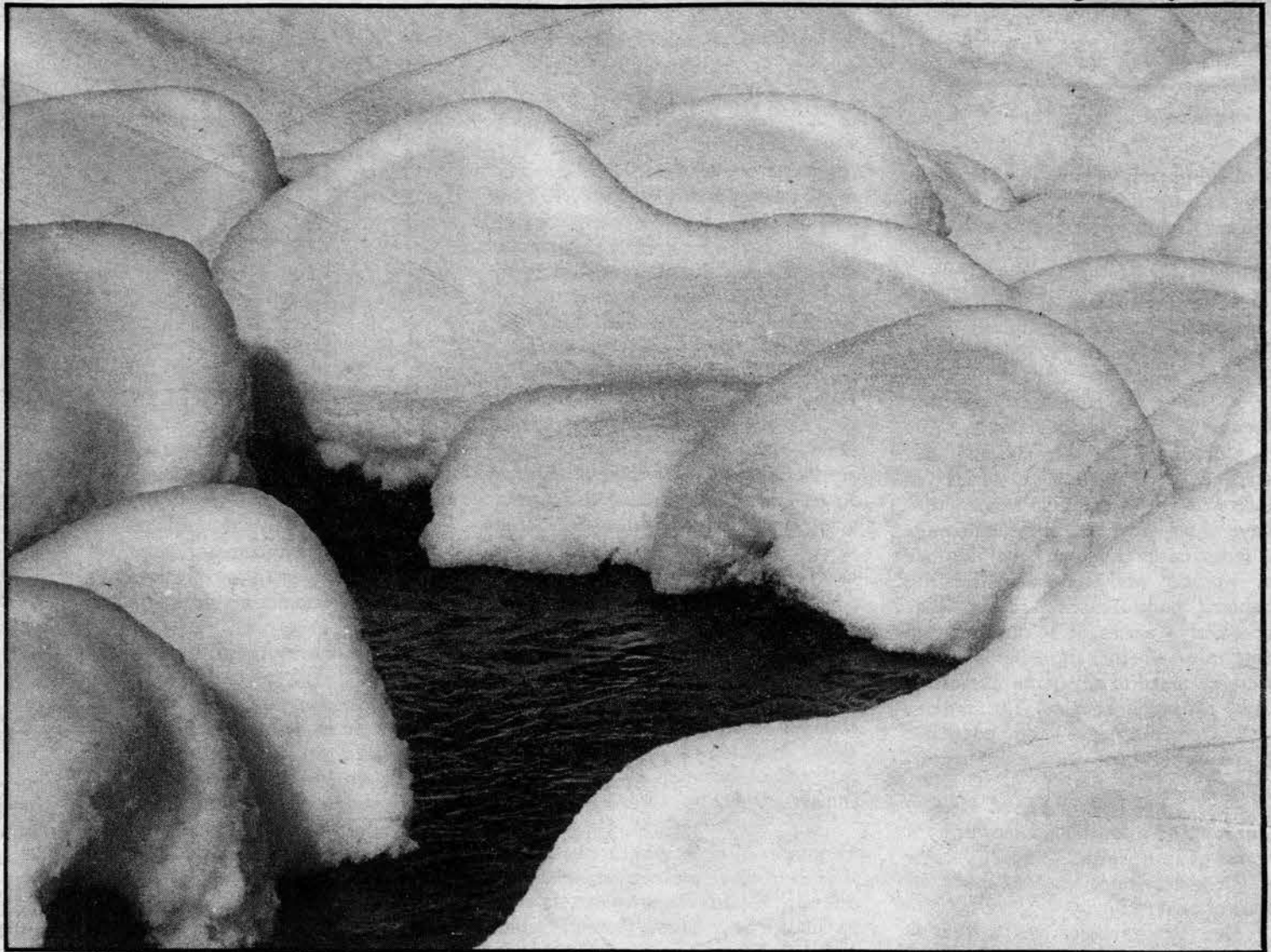


B.B. Brown

February 4, 1985 -- High Country News-9

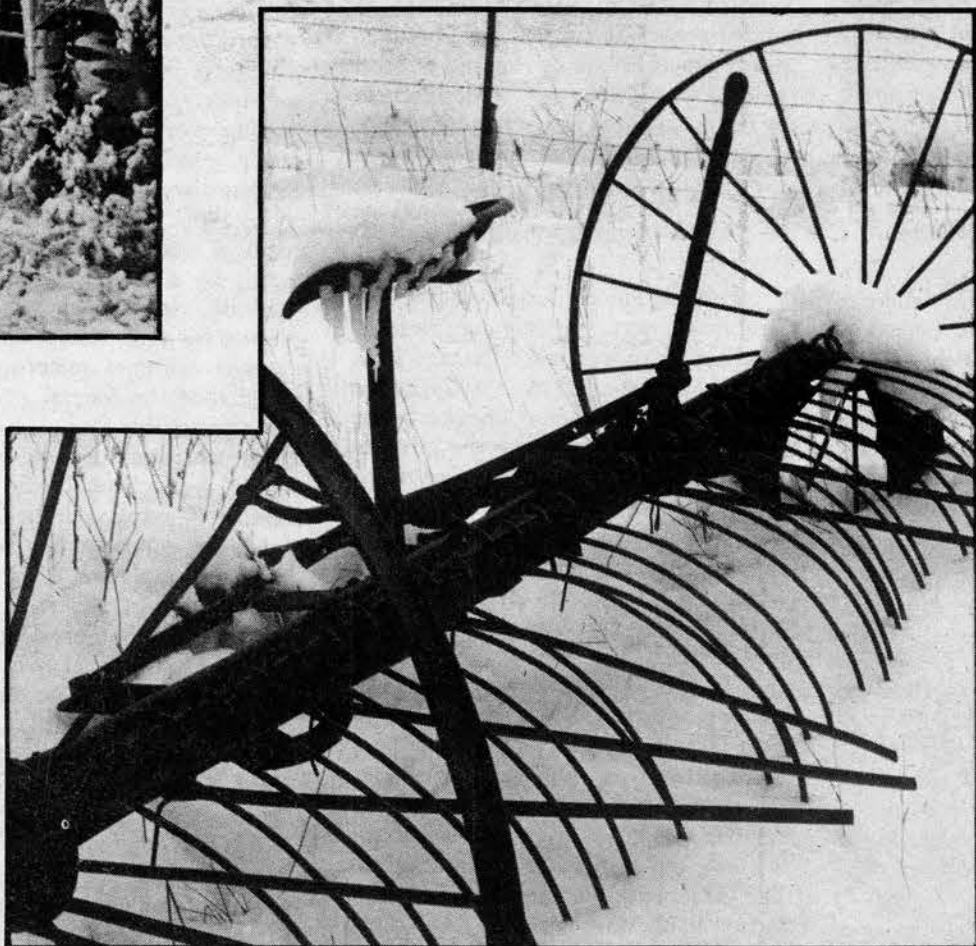


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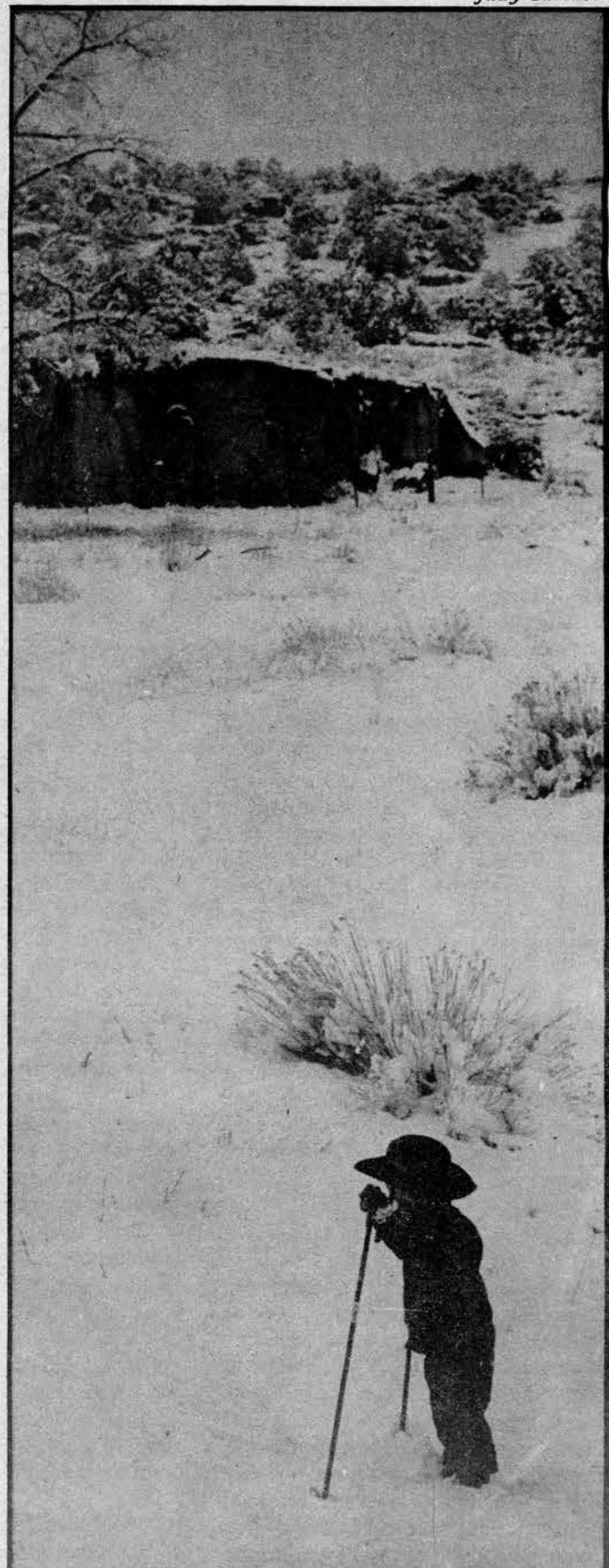
Geoff O'Gara



B.B. Brown



B.B. Brown



Judy Sumner

Navajo study...

[Continued from page 7]

semi-conductor plant in Shiprock, which had employed 1200 Navajo women and exposed them to a variety of chemicals, some of which were radioactive;

- The installation of electrostatic precipitators in the coal-fired Four Corners power plant, 20 miles east of Shiprock, and

- The local, and then general, decline of the uranium industry.

Currently, Dr. Shields and her staff are conducting a series of interviews with all of the women who have had adverse birth outcomes ("index cases") and an equal number of women who have had healthy babies ("control cases"). Each mother is asked a series of 34 questions to determine whether she or her husband were exposed to any of the numerous local radiation sources. The fathers and the maternal and paternal grandparents are also being interviewed.

Last July, I accompanied Helene Hanson and a Navajo interviewer on a series of interviews. None of us knew if the interviewee was an index or control case.

Our first subject was a grandmother, an aging matriarch with wrinkled brown skin. We sat in the early morning shade of a giant cottonwood tree as the heat of the desert intensified around us. She told us her family had lived near an abandoned uranium mine for 10 years while her three children were growing up. She said the children often played in the open shaft of the mine because it was "different and exciting." Perhaps, she speculated, that mine had something to do with her daughter's two miscarriages.

Our second stop was at a trailer near Red Valley. A crowd of young, inquisitive children gathered as their mother answered question after question with a shake of her head. While she answered no to every question, indicating that she had not been exposed to most local radiation sources, the pain on her face betrayed her feelings. Though she had been personally spared, she clearly shared the suffering of her people.

The third and final interview of the day was in Red Valley. Blood-red sandstone cliffs encircled us and jagged black monoliths, left by ancient volcanoes, pierced the sky. A Navajo woman left her cornfield to tell us her husband had been a uranium miner in the 50s. He had died recently. She answered each question in a soft voice -- a voice that revealed how weary she and the rest of Red Valley's Navajos are of being questioned, of not knowing why things have gone wrong.

Other health studies in the Four Corners area indicate that the adverse effects of uranium mining and milling are not just a problem for the Navajos. When looked at together, these bits of evidence add up to a potential tragedy for the entire Southwest:

COLORADO

In Grand Junction, Colorado, the Climax Uranium Company, under contract with the Atomic Energy Commission, operated a uranium mill from 1952 to 1970. When the mill was closed, the tailings pile covered 55 acres. Between 1952 and 1966 Climax allowed free public access to the tailings and encouraged the removal of the white, sand-like waste for private purposes, such as foundations

for highways, churches, homes, roads, culverts, and sidewalks.

Of the 300,000 tons now estimated to have been removed, 50,000 tons were used in commercial and residential construction. Public access to the tailings was terminated in 1966 by the Colorado Department of Health, but not before 4,000 homes, a dozen schools, and many of the streets and sidewalks of downtown Grand Junction had been built using the radioactive tailings.

A 1971 Colorado Department of Health study found two birth defects, cleft lip and cleft palate, occurred in Grand Junction at twice the rate as the rest of Colorado. The same study also found that the death rate from congenital abnormalities in Mesa County was 50 percent higher than the Colorado average from 1965-68.

A 1979 Health Department report cited twice the expected rate of leukemia in Grand Junction for the period 1970-76 (41 cases vs. 20 expected) and noted that the specific form of leukemia most common in Grand Junction, acute myelogenous, is "known to occur to a greater degree in persons exposed to radiation."

But, according to Dr. Stanley Ferguson, director of the division of disease control and epidemiology at the state Health Department, follow-up studies have failed to confirm the initial findings for cleft lip and cleft palate. "Rates in Mesa County," says Ferguson, "aren't significantly higher than in other counties." And while another Health Department follow-up study in 1983 found that leukemia rates in Mesa County are "not above expected norms," people over 65 years of age are two-and-a-half times as likely to develop leukemia in Grand Junction as are people of the same age in other parts of Colorado.

The upshot of all of this, says Ferguson, is that "some data support that there's a measurable biological and medical impact. Other data argue against it." Inadequate funding from the Colorado legislature and EPA has so far prevented Colorado's Health Department from conducting the in-depth studies required to resolve these questions, says Ferguson.

UTAH

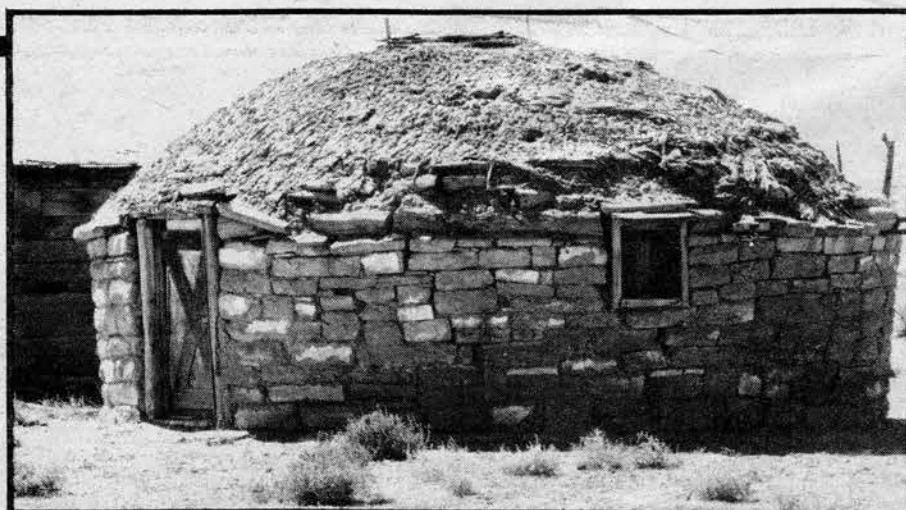
A 1978 Brigham Young University study of birth defects in Utah from 1969 to 1974 found that, in the four southern Utah counties where 92 percent of the state's uranium mines are located, the average birth defect rate was more than double the state rate.

In Monticello, Utah, a uranium mill operated from 1942 until 1960. In 1967, the Center for Disease Control discovered four cases of acute leukemia among Monticello children. The expected occurrence of this rare disease in a population the size of Monticello's would be one case in thirty years. The Center reported that "Contact with uranium, in mine or mill, had been experienced by 41 percent of Monticello households," but the Center did not go so far as to link the leukemia cases to radiation released by uranium operations.

Last October, the EPA listed Monticello on its new Superfund National Priority List, stating: "Prior to the mid-1970s radioactive tailings were widely dispersed throughout the town. Some appear to have been used as fill material and as aggregate for mortar and concrete, while others appear to have been carried from the mill by wind and water."

ARIZONA

Dr. Alan Goodman has reviewed



Radioactive hogan built with rock from uranium mine, in Red Valley

birth certificates for four counties in northern Arizona and found birth defect rates to be higher than expected. Goodman says those areas have two things in common: uranium mining, and extensive radioactive fallout from atomic bomb testing in the 1950s.

"Those who worked in the mines got a double dosage," says Goodman.

Of particular concern to Goodman is the Cameron area of the Navajo Reservation, 30 miles southeast of the Grand Canyon. There, numerous abandoned open pit uranium mines have filled with water and serve as swimming holes for children throughout the summer. Livestock drink year-round from the unfenced pools.

"Cameron has the highest birth defect rate of any community in Arizona for the years 1969-80, according to birth certificates," says Goodman, and birth certificates under-report birth defects because many disorders are not visible at birth when the certificate is filled out. Birth defects occur five times more frequently in the Cameron area than in the rest of the U.S.

NEW MEXICO

Rita Goodman, inspired by her husband's work, recently completed a study of birth weights of babies born during the period 1974 to 1979 in the predominantly Navajo "checkerboard area," which surrounds the Grants Uranium Belt. Below average birth weights would tend to indicate the presence of birth defects and other reproductive disorders.

Mrs. Goodman found a higher than normal occurrence of low birth weights in the Gallup-Crownpoint area, near the center of uranium mining and milling activity. She also found a progressive increase in birth weights as distance from the Grants Uranium Belt increased. In other words: the further from uranium mining and milling, the higher the birth weights. The closer to the center of the uranium industry, the lower the average birth weight.

"Lots of things affect birth weight," says Mrs. Goodman. "One of those things happens to be radiation."

She says other possible causes of low birth weight are smoking and alcohol. "But Navajos generally aren't smokers, and there's no indication that Navajos in the eastern part of the Reservation drink more than elsewhere on the Reservation, where average birth weights are higher by comparison."

"Something is going on in that area that is causing low birth weights," says Mrs. Goodman, "and it is cause for concern."

In spite of all of these findings, insufficient funding has limited scientific study. The question is still unresolved, even as public concern mounts. The Shiprock March of Dimes study for example, was funded at half the amount research scientists felt they needed to do a thorough job. The Colorado Department of Health also

lacks adequate resources to tackle the problem, in spite of the frequent requests for help.

"Seldom a week goes by when we don't get a call from someone in Durango or Grand Junction reporting a cancer or a birth defect and wondering whether radiation is the cause," says Stanley Ferguson in Denver.

The Navajos of Shiprock have become miner's canaries -- guinea pigs in a strange experiment. Navajos are not as mobile as white Americans; the people who have lived around Shiprock for the last 30 years still live there.

Thus, Shiprock represents an ideal "laboratory" to study the effects of radiation on human beings. Like the radiation victims of Hiroshima, Navajo miners, millworkers, mothers and children are teaching scientists and government health officials about the effects of radiation on human lungs and reproductive organs.

But even if the March of Dimes study establishes a link between uranium and birth defects, the victims will have a difficult time gaining any form of compensation. A July 1984 ruling by a federal judge in Phoenix, Arizona, denied government responsibility for lung cancer among former Navajo uranium miners. The judge ruled that the federal government is not responsible for health effects from early uranium mining because the states had been given regulatory control. The ruling dashed the miners' hopes of compensation, and dealt a blow to any future claims from birth defects victims.

On the other hand, a ruling last May by U.S. District Judge Bruce may be cause for hope. In that case, the judge ruled that radioactive fallout from poorly supervised U.S. atomic bomb tests was directly responsible for leukemia and cancer deaths in Utah, Nevada and Arizona. Jenkins awarded \$2.6 million to 10 fallout victims, and opened the door for damage suits by 1,600 other alleged victims. The cases may end up costing the government over \$200 million for nuclear negligence.

Discussing the preliminary findings in the Shiprock study, Dr. Alan Goodman is cautious: "I won't go so far as to say there's a link between these reproductive disorders and uranium mining and milling. I don't see evidence to say that, though I'm certainly not ruling it out. The occurrence of certain defects has now been documented, and a sudden drop starting in 1975 is now established. What the cause is will have to await further data." The March of Dimes study is due for completion in late 1985.

Christopher "Toby" McLeod is a freelance writer and filmmaker who lives in La Honda, California. This story was made possible by a grant from the Fund for Investigative Journalism; support also came from the High Country News Research Fund.

A Western Colorado uranium town is beset by radioactivity and the economy

High radiation levels and the lack of a tailings disposal site for future milling operations may force 200 uranium mill workers to abandon their homes in Western Colorado in 1988. But a layoff last year of 110 workers indicates the economy may get the job done first.

The company town is Uravan, close to the Utah border, and its owner is a Union Carbide subsidiary called Umetco Minerals Corporation. Surrounding Uravan is an area rich in uranium, radium, and vanadium. There have been milling operations at the site since 1915, and over the years millions of tons of radioactive wastes have accumulated and the area has been contaminated.

The town and mill merge along the San Miguel River in a narrow valley. Uravan includes 150 small, rectangular, identical houses and a post office, boarding house and recreation hall. The families of 600 workers lived in the company housing until 1980, the year the uranium market plunged and the mill reduced operations. Now, about 200 people live in 70 houses. Some buildings were destroyed after Umetco found that radiation levels were more than triple the allowable limits.

In the past, uranium tailings were often used as fill during construction. Connie Albrecht, Colorado representative for Friends of the Earth, says that even the town clinic is reportedly built on radioactive tailings.

Umetco has been operating without a license from the state since 1975 and has been negotiating for a renewal ever since. As part of that ongoing relicensing process, Umetco, the Colorado Department of Health, and environmental groups reached an agreement earlier this fall specifying which criteria must be met if Umetco is relicensed.

Under that agreement, Umetco will be required to monitor radiation levels in town, cover a huge uranium tailings dump, and reclaim evaporation ponds. Umetco must also meet minimum ambient radiation levels by 1988; failure to do so will result in the evacuation of Uravan and the decommissioning of the mill.

High above the mill on Club Mesa lie two man-made mountains of radioactive tailings containing eight and two million tons, which will be dried out and covered with a foot of dirt in 1985. This action serves two purposes, says Ken Weaver, health physicist with the state health department. By first allowing the piles to dry, future seepage of contaminated water will be minimized, he says, and by adding the foot of dirt, the blowing about of radioactive dust and radioactive emanation will be prevented.

Ambient radioactivity is in the form of gaseous radon. Weaver says radon molecules attach to dust particles and are inhaled into the lungs, creating a potential for lung cancer.

The cancer risk posed by the radon is being debated. The Environmental Defense Fund argues for a limit no

greater than one picocurie per liter of air, says staff attorney Jim Martin. Umetco says a limit of three picocuries will be sufficient. Martin says the health effects difference between the two levels is major. He cites New England *Journal of Medicine* study which shows that at a lifetime exposure to three picocuries, one in 19 people will get lung cancer. A one picocurie limit would reduce that risk to one in 57, he says. Jack Frost, director of operational services for Umetco in Grand Junction, says that while there may be some calculable health differences, he questions their significance.

The state limit for radon is three picocuries, but Weaver says the health department is currently deciding if a different level should be applied to Uravan for relicensing. He says, "There's a lot of weight for using the one picocurie limit as a trigger for action," but that it is difficult to determine the ideal allowable limit because it is hard to distinguish artificial radioactivity from natural background radioactivity. Martin says his Boulder-based group is "dubious whether Umetco will meet the health standards by 1988." Should Martin's skepticism prove to be accurate, Uravan will cease to exist.

Another major part of the reclamation plan concerns seven evaporation ponds along the river where liquid wastes from the mill are evaporated. These ponds have long seeped contaminants into the nearby San Miguel River. But in 1985, they will no longer be used and will be excavated, revegetated and recontoured.

The wastes will be stored on Club Mesa. The Club Mesa site itself will also no longer be used after all present wastes are deposited there. Contaminants from the tailings piles have been seeping down the hillside into the river below. Weaver says the hillside seepage collection system is only 95 percent effective.

Umetco's next challenge is to secure a site to dispose of radioactive wastes from future milling operations. To that end, it has been trying to gain approval of a site on Spring Creek Mesa, a few miles across the river. But it has encountered difficulty in its quest. Both the state and conservation groups worry about groundwater contamination, and it will be months before the state reaches a decision on the site.

In August, Umetco and the National Wildlife Federation collaborated on a design plan that sought to prevent groundwater contamination. Yet, Margaret Puls, secretary-treasurer of FUTURE, a Denver-based group, and Albrecht say the plan is faulty. They are disappointed that a fellow environmental group agreed to the inadequate proposal.

"We feel like we've been sold down the river," Puls says. At a public hearing in Montrose in November, Albrecht testified that Umetco should not get the impression that NWF speaks for all environmental groups.

More skepticism revolves around Umetco's ability to finance the reclamation costs. Frost says the process will cost \$27 million, but Albrecht estimates that costs "could easily be twice that."

Puls notes that Union Carbide's credit rating has slipped and is now "pretty poor." Al Hazel, director of the state health department's Radiation Control Division, says Umetco's credit rating is acceptable. Umetco's Frost says Union Carbide's credit rating never slipped.

However, Frost made this statement before Union Carbide's Bhopal, India, explosion, which killed 2500 people. The firm's stock has since plummeted almost 30 percent and its credit rating has slipped.

Puls also attacks Umetco's reliability. It is at the mercy of an unstable uranium market and she says the western end of Montrose County needs a more consistent, environmentally compatible industry. Her objection to the mill at Uravan has made her few friends in the area. She recounts incidents in which anti-Umetco people have been threatened and harassed and says members of FUTURE will not attend public hearings in the Uravan area for fear of violence.

Peyote Cyote, also known as

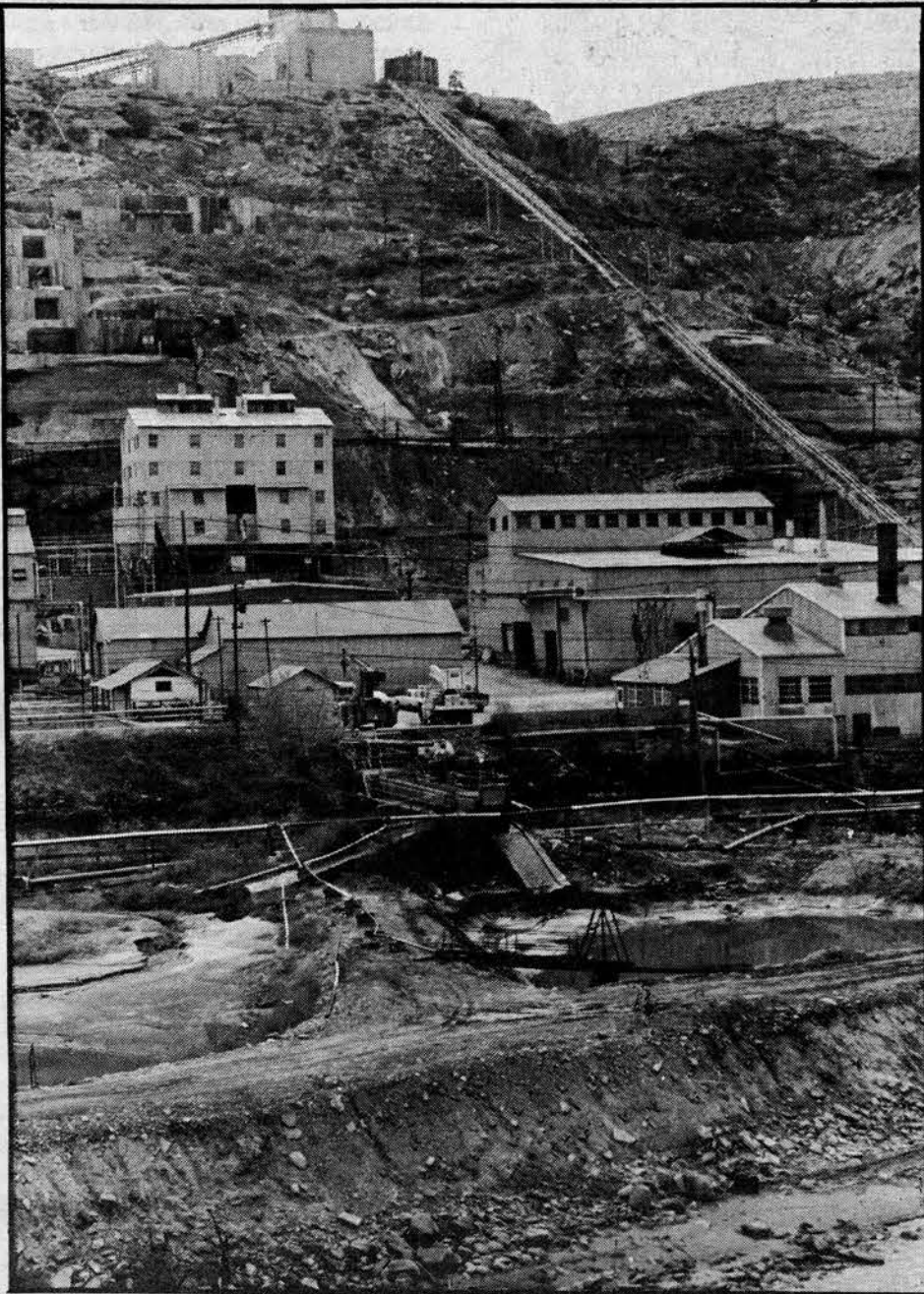
Cooper Schellenbach, lives in Naturita, a few miles southeast of Uravan, and is secretary of the Western Small Miners Association. Many of its members mine small tracts of land for uranium which Umetco buys. Cyote says that although he looks like "a full-blown hippie environmentalist" with his long hair and head band, he is a strong supporter of the Uravan mill. He charges that environmentalists and the state are ignorant of and hypersensitive to nuclear issues.

Cyote says Puls' allegations of harassment are unsubstantiated, but admits there is some hostility because area workers perceive environmental groups as threatening their jobs. "I suspect that if you were an environmentalist, it would not be wise to walk into the Naturita bar on Saturday night and say 'Uravan has to be closed.'"

Actually, Uravan is all but closed. Umetco has temporarily suspended milling operations and is retaining only a small force of employees to keep the mill in standby condition. But Umetco officials are confident that the uranium market will bounce back and the mill will increase production as new nuclear power plants come on line. "Uravan will not become a ghost town," Frost says.

--Jeff Marti

Betsy Marston



Union Carbide's milling operation, Uravan

The Grand Canyon area could host large-scale uranium mining

In the days before Winnebagos besieged the rims of Arizona's Grand Canyon, prospectors on mule, foot and burro roamed the exposed rock in search of mineral wealth.

Native New Yorker and orphan Daniel L. Hogan was one of the lucky ones. He located a copper claim 1,000 feet below Maricopa Point on the South Rim in 1893, and named it "Lost Orphan Mine." Hogan's mine was not profitable, so in 1936 he built a tourist lodge at the site. Then, in 1951, the U.S. Geological Survey discovered a lode of rich uranium mixed in with the copper and by 1954 a uranium mine was in full production.

In 1962, the Park Service reached an agreement backed by an act of Congress which allowed the uranium to be mined until 1987, when the entire site was to revert to the Park Service. But the economy did the mine in before the agreement, and Lost Orphan has been shut for years. It still stands on the South Rim directly behind the John Wesley Powell Memorial overlook, highly visible to millions of tourists.

Today, Lost Orphan Mine is more than a historic ruin. It is a symbol of a possible new era of mining in the Grand Canyon region. It reminds uranium companies of potentially rich ore bodies, and it reminds tourists and conservationists of what the region could become.

The controversy has been triggered by Energy Fuels Nuclear Inc.'s proposal to develop the Canyon Mine. The mine would be 13 miles south of Grand Canyon Village and two miles east of Highway 64, the main road to Grand Canyon's South Rim. The Forest Service received the proposal in November 1984 and is now taking public comments.

The mine site is on the Kaibab National Forest's Tusayan Ranger District, an area thick with ponderosa pine and used for timbering, grazing, and recreation, as well as the hunting of elk, deer and turkey.

Energy Fuels, a Denver-based company, has three uranium mines in production or development on the Arizona Strip, the 160-mile-long plateau bordering the Grand Canyon's north rim. The firm also has an estimated 40,000 uranium claims on both sides of the canyon. The total claims by all firms may be as high as 900,000.

The activity is due to the discovery of geological structures known as breccia pipes. These cylindrical, corkscrew deposits are extremely rich in minerals. They are believed to form when a section of earth collapses downward. Hot gases escaping to the atmosphere along this tube of weakness deposit uranium, copper, and other minerals on their way out. The ore found in these pipes is three to 10 times richer than ore found elsewhere in the U.S.

One Energy Fuels official estimated the company would get from 10 to

25 pounds of U₃O₈ (yellowcake) per ton of ore. That gives the firm a tremendous advantage over mines producing ores that yield only two to three pounds. Energy Fuels vice president Brad Doores says the pipe deposits have kept his company operating while other American uranium mines and mills shut down. They let the firm, he said, "compete against the Canadian and Australian producers."

"We're probably the most active uranium mining company in the country right now," says Doores. "Our plans call for between five and 10 million dollars in exploration each year, with our goal to find one new mine a year."

Energy Fuels has been exploring in the Grand Canyon area for a decade, clashing with environmental groups many times. But it was Energy Fuels that sat down with five major environmental groups to hammer out a massive compromise over BLM Wilderness Study Areas on the Arizona strip (HCN, 4/2/84). The negotiations resulted in the 1984 Arizona Strip Wilderness Law. It set aside 395,000 acres as Wilderness and 620,000 acres as multiple use areas open to mining.

The negotiations gave Energy Fuels a good reputation with conservationists. But because of the proposal for the South Rim and problems with existing mines, former fans of the company now question its "upfrontness."

Ace Peterson, president of the Arizona Wildlife Federation, said he was "shocked and dismayed" when he heard about the South Rim plans. "They had assured us on trips we took to the mine sites that they had more than enough to do on the north side... that they had enough to keep them busy well into the next century without doing anything else that would impact other environmental areas."

National Parks are not sacrosanct

National Parks are not sacrosanct preserves dedicated to nature. As the several stories on these pages show, even world famous parks must accommodate inholdings or live with development close to their borders. The parks were formed by the same process of compromise that the nation is going through now with Wilderness, and those compromises have left their mark.

In the July 23, 1984, issue, *High Country News* explored grazing in national parks. In these several stories, HCN looks at mining and water projects in and around two of America's most famous, and most visited, parks: Grand Canyon National Park and Grand Teton National Park.

Company vice president Doores says he attended all the trips, and that no such guarantees were given. The Orphan Mine "is the reason that we came down into the Strip to begin with... The reason we began looking north and south was because of the existence of that deposit."

Russ Butcher of the National Parks and Conservation Association worked closely with Energy Fuels on the 1984 Wilderness bill. He said, "It was not a surprise when I heard of the planned mine on the south side. I was aware they were exploring south of the Canyon." Butcher sees the Canyon Mine proposal as "environmentally sound" and says he continues to view Energy Fuels as a model company of the energy industry, one that continues to be "extraordinarily responsible."

The move to the South Rim has attracted attention from people who weren't concerned about the remote Arizona Strip. The new site in the Tusayan District handles the spillover tourists from the Grand Canyon and is used by many residents of Flagstaff, 60 miles away.

Issues center around the large scale development portended by the firm's three Arizona Strip mines, its 1500 "target areas" of promising breccia pipes, and its 40,000 claims. Energy Fuels can't allay the fears about where new mines will go. Doores says, "You go where the indications are."

As a result, several environmental groups are seeking a study of the cumulative impacts of dispersed mines. "What we have been trying to do for years now is to have these agencies do an EIS," says Jane Whalen of the Southwest Resource Council in Hurricane, Utah. Past requests were rejected. "This is the fourth mine going in," she says.

"How many times can they tell us it isn't a major federal action?"

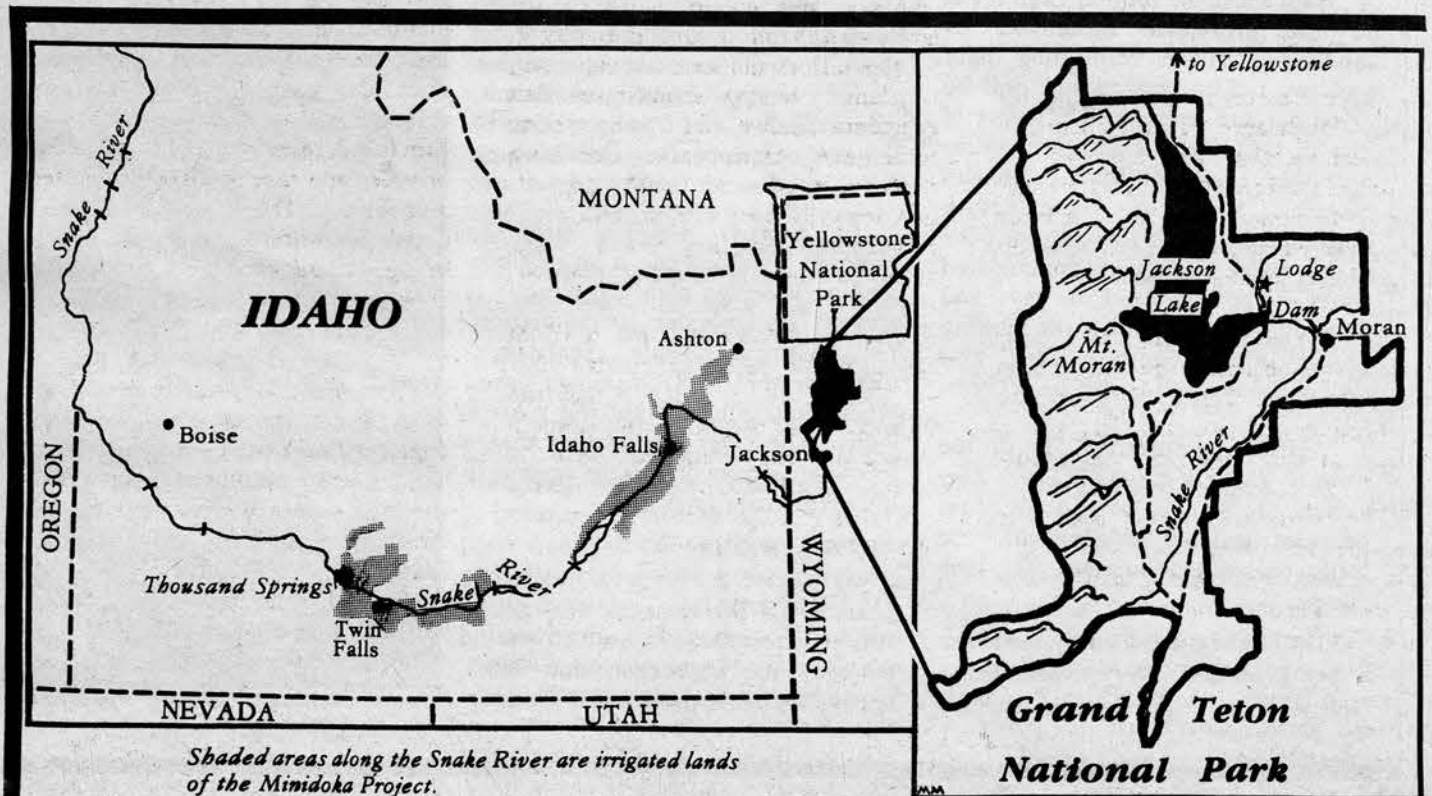
It is clear from a November 1984 statement by Kaibab Forest Supervisor Leonard Lindquist that the agency is not taking a broad view of the question. He said then that the laws and regulations narrow "the scope of the mining analysis to one of assessing the adequacy of proposed measures to be taken to minimize adverse environmental impacts." In reaction to this long-standing policy, some groups are talking of going to court and a precedent in the area indicates they have a chance of forcing a comprehensive study.

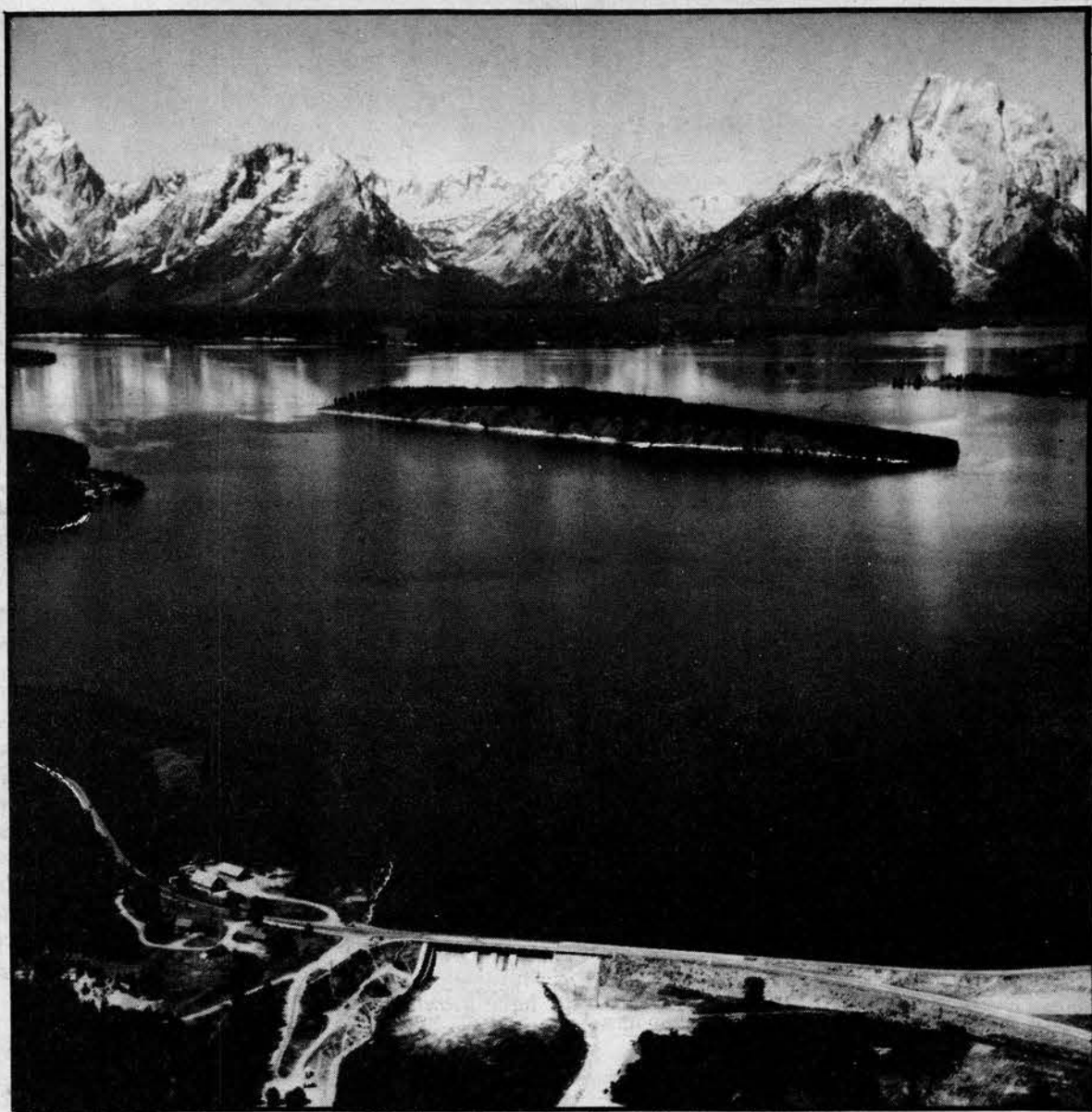
In August 1983, the Sierra Club sued the National Park Service for failing to file an EIS or Environmental Assessment on the effects of mining on 200,000 acres between the Grand Canyon and the Arizona Strip. According to that suit, the Park Service, which controls the land even though it's not in the park, was allowing mineral development without considering environmental effects. Many of the claims were for uranium, and Energy Fuels was one of several firms wanting access into the area, according to Laurie Potter, an attorney in Denver with the Sierra Club Legal Defense Fund.

"Since that action (the August 1983 lawsuit), the leases have come to a screeching halt," she says, while the Park Service considers taking a broader look at the land. "The Park Service had the discretion to allow mining, but the greater responsibility is to protect the land first, and secondly issue permits," she says.

--Patricia Guthrie

Patricia Guthrie works for Desert-West News Service in Flagstaff. This article was paid for by the High Country News Research Fund.





Water pours out of Jackson Lake through the dam. The unstable north dike is on the right. Mount Moran is the right peak.

Jackson Lake Dam goes back three generations

by Betsy Bernfeld

The top of Jackson Lake Dam affords one of the best views of Mount Moran in all of Grand Teton National Park. With its east and west horns, massive south buttresses, drizzlepuss and summit the size of a football field, Mount Moran casts a clear reflection in the glassy blue Jackson Lake.

Looking to the south, I can picture the small town of Wilson, Wyoming, about 30 miles away. A little fog is probably still wafting off the nearby Snake River. Smoke is undoubtedly curling from the chimneys of a few log cabins.

As the sun gets a little higher, I know the warmer air will begin to move up the valley from the southwest. Jackson Lake will be disturbed by small ripples. The perfect image of Mount Moran will be blurred.

There's an unseen feature in this idyllic landscape. From Wilson to Yellowstone along the base of the Tetons is the Teton Fault. This 50 to 60 mile long break in the earth's crust has groaned and moved 30,000 feet over the past nine million years. It created the mountains.

As the day advances, traffic through Teton Park, which moves on the highway across the dam, will pick up. As many as 9,900 cars will go by in a day at the height of the tourist season.

The blurring of Mount Moran in the water and the steady flow of traffic makes someone standing on the dam begin to feel precariously perched. And recently, U.S. Bureau of Reclamation officials have determined that the dam itself may be precariously perched.

Its precariousness is Jackson Lake Dam's major claim to attention. Were it sound, the dam would attract little

attention. Unlike canyon-blocking masses such as Hoover or Glen Canyon, which back up a cliff of water behind their arched walls, Jackson Lake Dam is more dike than dam -- the kind of structure a kid builds to make a small puddle a larger puddle. The small puddle is the original Jackson Lake -- a depression formed by a glacier that filled with water. The series of dams the Bureau has built over the past 70 years or so deepened and enlarged the lake.

The "dam" today is actually three separate structures. At its southernmost end, there is a 200-foot-long embankment dike. That is joined to the 220-foot-long concrete dam, which contains the spillways and the gates which let the water out. Finally, there is almost a mile of dike running north from the dam over an alluvial fan -- a long arm reaching out to keep the lake's water from making an end flow.

The short southernmost dike and the dam have good foundations. But engineers believe that in a moderate to severe earthquake, the long northern dam could liquefy, literally flow away. If the reservoir were high, catastrophic flooding would occur along 230 miles of the Snake River. Grand Teton National Park headquarters in Moose and the town of Wilson would be totally inundated.

Were that to happen, and the Bureau says there's a 40 percent chance of it happening in the next 100 years, it would not be the first drama the Jackson Lake Dam has been part of in its 80-year history.

DAM #1

The first Jackson Lake Dam was a temporary timber structure built by the Bureau's predecessor, the U.S. Reclamation Service, in 1906-1907. Logs for the dam were hauled to the site by horse and wagon from a mill in Wilson. Other supplies came 75 miles

across the Tetons from Ashton, Idaho, in 14-foot-long Studebaker wagons along a dirt trail first used by outlaws.

The Wilson logs, hammered together into a 185-foot-long crib, were floated into place at the outlet of Jackson Lake. Rock quarried from nearby Signal Mountain was then piled into the crib, sinking it into the water. The sunk crib was topped off by a framed superstructure 15 feet high supporting 25 gates to control the water outflow.

In the summer of 1908, the gates were lowered shut, backing water up behind the dam. Idaho farmers downstream on the Snake received 155,000 acre feet of water out of Jackson Lake that summer.

However, by the close of 1909, part of the sunken cribwork was found to be rotting. Engineers tried to repair the damage by dumping several thousand yards of rock at the toe of the structure. But the patch job didn't hold. On July 5, 1910, with the reservoir full, the middle section of the dam failed, releasing 164,000 acre feet of water at a rate of 10,000 cubic feet per second. The scouring, flooding mass of water damaged several bridges and a ferry 40 miles downstream.

DAM #2

The water was barely out of the dam when the Bureau assigned engineer Frank M. Crowe, age 28, to build a new, permanent dam at the site. His orders were to get the job done before the 1911 irrigation season.

Crowe had no men, little housing, and the same distant supply point at Ashton, 75 miles of outlaw trail away. He called in a handful of engineers and then is said to have recruited "every bindlestiff and bum riding the roads." Before he was finished, he had collected 400 workmen from all

over America and Europe, ordered a complete sawmill from Salt Lake City and, through a bishop in Ashton, rounded up every team of horses in the area not engaged in harvesting.

To meet the deadline, Crowe did what today would be called "fast tracking." His structural engineer, Norman Torence, designed the dam just ahead of construction. What he designed was a 202-foot-long reinforced concrete structure with a gated spillway and flaring abutments at each end from which the earthen dikes extended.

So quickly did the project move that work couldn't wait for the 12 headgates ordered from back east. Instead, the concrete housings for the gates were built first, arousing plenty of speculation about whether things would fit.

Construction conditions were not ideal. At times, the crews poured concrete at 50 degrees below zero. To keep materials from freezing, Crowe had wooden sheds built over each section of the dam, and heated them with 22-foot-high, eight-ton steam boilers which had been bumped over the 8,429-foot Teton pass from Victor, Idaho. At first the boilers were fired with wood. But when snow fell and wood became hard to find, the ever-ingenious Crowe opened a coal mine.

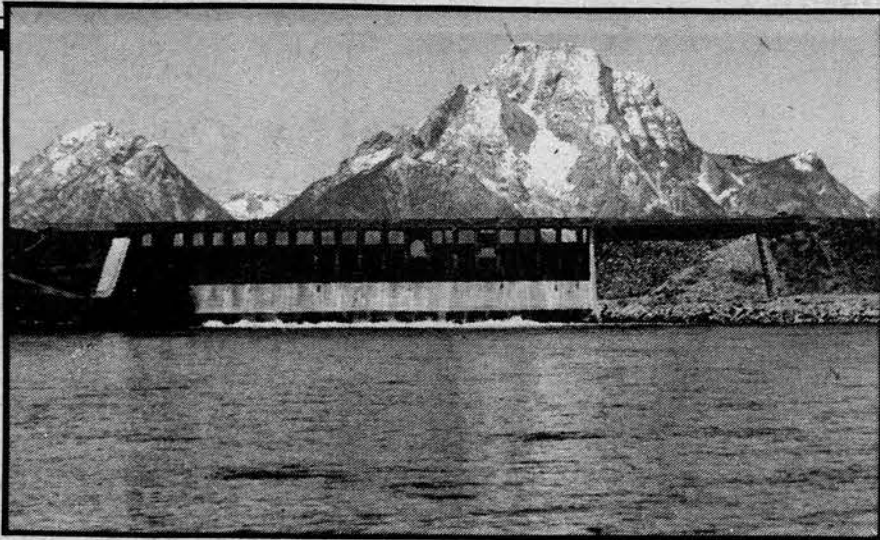
Just before the really heavy snows closed the Ashton road, the twelve spillway gates arrived from the East. They fitted snugly into place.

Less than a year after construction began, the dam was holding back water. It had cost less than a half million dollars and was called "a substantial miracle" by some local historians.

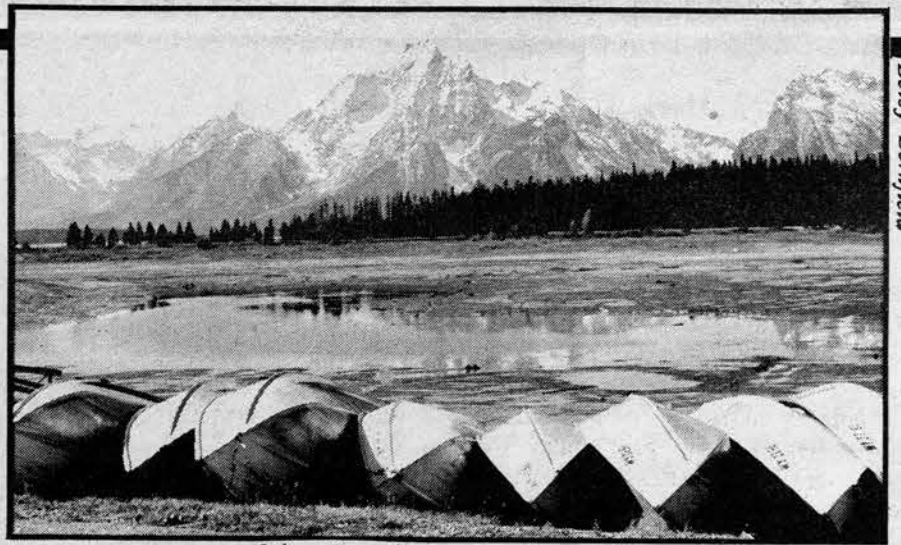
DAM #3

Crowe's 1910 version isn't what
[Continued on page 15]

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Jackson Lake Dam in Grand Teton National Park



Colter Bay, the most popular marina on Jackson Lake, has been reduced to a puddle since the dam was lowered

Betsy Bernfeld

Two western forces clash at Jackson Lake

The frailness of Jackson Lake Dam brings two sacred Western forces into conflict: agricultural water rights versus one of America's most beautiful and popular national parks.

Neither interest dominates the struggle. Originally, the Idaho farmers who use the lake's water and the Bureau of Reclamation proposed a new dam on Pacific Creek which would have flooded Oxbow Bend and other scenic and wildlife areas. The public reaction and opposition from the Park Service blew the proposal out of the water.

But once the farmers and Bureau retreated to reconstruction of the existing dam, opposition subsided. It subsided even though the rebuilding will involve four years of day and night noise and heavy construction. The dam is near the major road through the park and in sight of Jackson Lake Lodge. Rebuilding will also involve the mining and transporting of approximately one million cubic yards of rock, gravel and sand within the park.

Lenny Carlman, a staffer with the Jackson Hole Alliance, says conservationists helped stop construction of a new dam and have pressured the Bureau to plan the rebuilding so as to minimize damage. Carlman says, "This project has moved significantly. They have made huge strides. It's a lot better than two years ago."

But he also says there are still problems. He says the Bureau's Environmental Impact Statement on the rebuilding doesn't let the public know how reconstruction will affect the park. "I think they've fast-tracked this. They're going ahead before plans are ready."

Carlman's objections go beyond construction impacts. He says the Alliance asked the Bureau to look at a water conservation alternative which would save enough water to eliminate the Idaho farmers' need for Jackson Lake. The EIS concluded that the conservation alternative "has the least adverse environmental impact of all the alternatives." But the Bureau chose reconstruction rather than conservation as its preferred alternative, and Carlman says of the Bureau and conservation: "Their response has been dismal."

Terri Martin, a staffer with the National Parks and Conservation Association in Salt Lake City, agrees. He says, "They refused to step outside their narrow structure." She sees it as a failure for the agency. "Jackson Lake presented them with an opportunity for innovative work on water. It's a question they will face over and over again."

Although the Jackson Hole Alliance has been involved with the

project for several years, it was not until January 22 that its board voted to oppose rebuilding and support the conservation alternative, perhaps reflecting the lack of strong feeling against the project in northwest Wyoming. The Park Service, for example, strongly opposed a new dam on Pacific Creek but backs the rebuilding.

Conservation appears to be a practical alternative to rebuilding. A report prepared for the Bureau by Bio/West, a Logan, Utah, consulting firm, determined that the historical water needs of the Idaho farmers could be met with Jackson Lake at its natural (non-dammed) level of 6745 feet of elevation if conservation measures were adopted.

The report said 24 percent (686,000 acre-feet a year) of the water diverted by the four major Jackson Lake irrigation cooperatives seeps out of unlined canals. By comparison, since 1957 the farmers have used no more than 520,000 acre-feet of water a year out of Jackson Lake. So the water savings from canal lining would be greater than present use. Martin says there are also other conservation possibilities, including a buy-out of unused water rights and crop insurance against the drought years.

The farmers and the Bureau have a different perspective. Wayne Haas of the Idaho Water Resources Board argues that there is no waste. He says water seeping out of the ditch helps recharge the Snake River aquifer and the springs it feeds. Bureau calculations, however, show that conservation would cause only a three percent decrease in flow at Thousand Springs.

James Mumford of the Bureau argues that the conservation alternative is not a non-building alternative, but merely transfers construction to the irrigated lands. The farmers, he indicates, believe they gave away enough when they surrendered a new dam at Pacific Creek, with its \$38 million price tag.

The rebuilding of Jackson Lake dam will cost \$82 million, and conservation would cost about \$102 million. The farmers will pay 15 percent of the rebuilding cost.

The 1.2 million acres within the irrigated Minidoka project in eastern Idaho produces potatoes, sugar beets, onions, onion seed, mustard seed and other crops. In a normal year, Mumford says, the Minidoka farmers "draw down 200,000 to 300,000 acre feet of Jackson Lake water. But in a drought year like 1960-1961, they emptied the reservoir. And they really pulled it down a long way in 1977." The farmers see the 850,000 acre-feet in Jackson Lake as

their "insurance policy against drought." They're not against conservation, he adds. "They're improving their efficiency, but they don't want the federal government involved."

Mumford also argues that the dam is not an intrusion into Grand Teton National Park. "The dam and park have grown up together." When the park was expanded in 1950, the dam and lake were excluded from the park and kept under control of the Bureau. Mumford says the 1950 law "identifies the right of the Jackson Lake Dam to be there."

Terri Martin believes the opposition to conservation is based on more than the right of the dam to be in the park or the reluctance of the farmers to go through the hassle of having their ditches lined. The key, she thinks, "is the strong prejudice toward protecting water rights, even if they're only paper water rights. Changing someone else's right might jeopardize your own."

It is a general rule in the West that irrigators and cities accumulate as much "real" water as is economically possible, with conservation used as the "last reservoir." In this case, with the farmers paying only 15 percent of the rebuilding cost, their economic interest is to go with rebuilding.

Physically, the rebuilding has two separate parts. First, the 4600-foot dam must be strengthened so it won't liquefy in a quake. Second, the face of the dike must be hardened to resist erosion. All together, the strengthening, hardening and some expansion will require almost one million cubic yards of rock, sand and gravel.

The strengthening calls for large amounts of sand and gravel, while the facing of the dike requires rock or cement to serve as rip rap. Both involve threats to the park because the material must either be mined close to the dam, where it might be visible for decades, or it must be mined outside and transported to the dam along heavily used tourist roads.

Mumford says the dike is now vulnerable to an earthquake because "the foundation is saturated with water" and in a quake the water-lubricated particles would slide over each other like a liquid. So, he says, the dike has to be made compact enough to keep out water.

The most dependable, and expensive, method of doing this, he says, is compaction piles: "It's like pounding gravel down a gopher hole." But the scale is much larger. The 11,000 holes spaced six feet apart will be almost two feet in diameter and up to 100 feet deep.

The vertical piles of compacted sand and gravel will act like supporting columns within the dike. In

addition, the pile-driving action of creating the columns, Mumford said, will make the surrounding material more dense and keep out water.

According to Mumford, sand and gravel for the compaction holes is abundant one mile north of the dike in Pilgrim Creek. He says the Bureau has been building dikes of gravel along Pilgrim Creek for many years to confine the creek to its bed. Some of the dikes are no longer needed; removing them would improve the creek's appearance while providing the raw material.

Material to face the dike is more difficult to find. The Bureau originally intended to mine 200,000 cubic yards of rock from Bearpaw Bay. The resulting quarry would have been covered when the lake level was raised, but it was found the rock in the bay was too small. The Bureau is now considering taking some rock off the face of the dike, casting concrete rocks, or making soil cement for facing. The last two measures would require construction of small plants near the lake, as well as storage piles of material.

In addition to concern over the permanent damage the mining of materials may cause, there is worry about the effect of four years of summer construction at the heart of the park. The compaction pile treatment requires hammering a steel tube up to 100 feet into the embankment. Fifteen to 20 compaction pile rigs would be on site for three summers, working from early morning to probably midnight, each putting out about 93 decibels. After dark, they would be working under floodlights.

The noise of the pile drivers would combine with that of air compressors, heavy trucks, scrapers, loaders, dozers, generators and cranes. The EIS says it would be "a major contrast to the natural area," which is "used extensively by park visitors."

Unless Congress vetoes the \$80 million earmarked for the rebuilding in the Dam Safety Act, that's probably the scene that will greet visitors to Grand Teton National Park over the next several summers. But for now, the area around the dam is quiet.

Also quiet is Teton Fault, Geologists who have monitored the fault over the past decade have heard hardly a seismic whisper. They hypothesize that the Jackson Lake portion of the fault is inactive, or else it is episodically active and the activity was not detected during the short monitoring periods.

Or, they say, the Teton Fault may be "locked up," accumulating energy for a really big one.

--Ed Marston, Betsy Bernfeld

Under the dam is a treasure trove

On July 13, 1981, the Jackson Lake Dam was declared eligible for the National Register of Historic Places.

According to the Keeper of the National Register, the site qualified because of "its significant associations with the history of conservation, settlement, and engineering as an element of one of the first federally financed irrigation projects authorized by the Reclamation Act of 1902."

Ironically, the "historic place" caused the burial of numerous other sites of historic interest.

Among these was part of the Ashton-Moran freight road so important to the construction of the dam. Other inundated sites documented by historian Slim Lawrence include Beaver Dick Leigh's cabin, which was knocked down by driftwood, several old homesteads, an emorous hot springs where trappers had built stone and log tubs for bathing, part of the old Yellowstone Military Highway and several Indian trails.

The most significant site buried by the reservoir was a large prehistoric base camp at the north end of Jackson Lake. Archaeologists believe the site may cover one square mile and that it was used each summer for as long as 9,000 years.

Back in the 1920s, a wrangler told Slim Lawrence about the camp. Lawrence was the foreman of the AMK Ranch on Jackson Lake and an avid collector of historic items. The site was uncovered each summer when the reservoir was drawn down near the original lake level. Lawrence searched the mudflats for cultural material, crawling through the acres of downed timber that were the aftermath of the filling of the reservoir.

He found thousands of prehistoric artifacts, including projectile points, bifaces (knife-like stones), grinding stones and slabs, soapstone vessels, ceremonial pieces, jewelry items and one human skull. The items are now housed in the Jackson Hole Museum. Because of Lawrence's extensive discoveries on the north shore of Jackson Lake, the archaeological site has been named the Lawrence Site.

Archaeologists have been able to date the Jackson Lake artifacts by comparing them with materials found

at other sites in the intermountain area. They believe all cultural periods from 9,000 to 200 years ago are represented at the Lawrence Site.

With the construction of two more dams on the Snake River downstream from the Jackson Lake Dam -- the American Falls Dam in 1927 and the Palisades Dam in 1958 -- Idaho irrigators have not often needed to draw their full share of water from Jackson Lake. In fact, except for a few dry years in the early 1930s, the lake has rarely been drawn down close to its natural level.

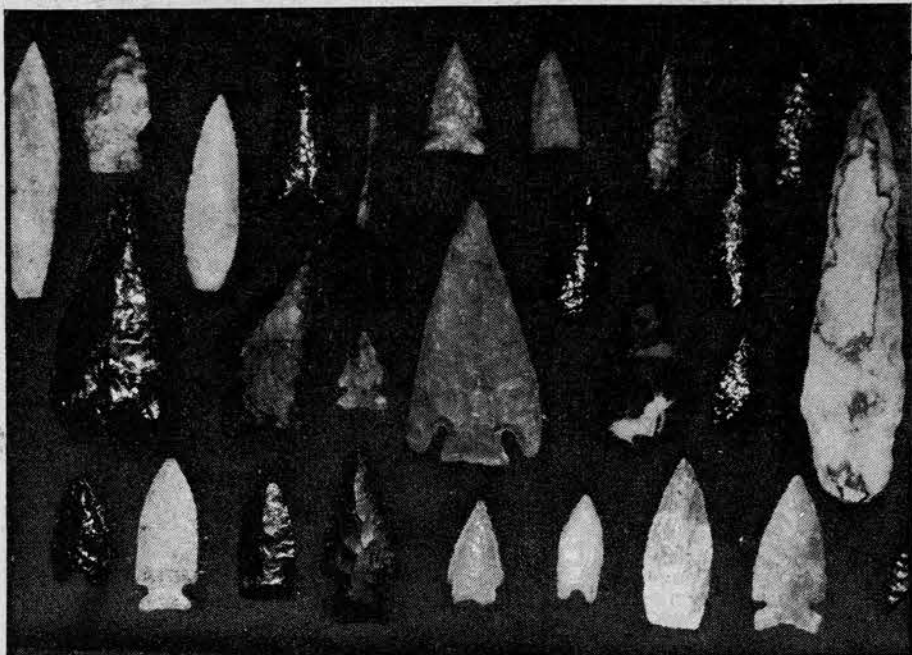
Seventy years under a reservoir which froze in winter, thawed in spring and fluctuated in summer may have caused considerable damage to the Lawrence Site.

According to Lawrence, the Indian camp area was once heavily forested, but most of the forest was reduced to driftwood by the filling of the reservoir. Prevailing winds from the southwest continually harrassed the camp on the northeast shore of the lake, not only with moving driftwood, but also with ice, which would pile up as high as 50 feet.

Once the driftwood was removed, Lawrence said tremendous erosion took place. He said the AMK Ranch lost 40 acres in a few seasons. And he reported that a hundred or more tree stumps still standing at the Indian camp site soon had four feet of roots exposed.

He recalls, "Verba (his wife) and I used to go up there and watch the ice pull the stumps out in the spring."

When archaeologist Gary Wright of the State University of New York surveyed the northern shore of Jackson Lake in 1977 -- a severe drought year when the reservoir was 28 feet below normal -- he reported that the Lawrence site was greatly disturbed by wave action. Even so, he collected 69 distinctive stone tools and described 93 other artifacts which he did not collect. He found 77 hearth-like structures, presumably for



These Cody knife blades created some 8,500 years ago are part of Slim

Lawrence's collection at the Jackson Hole Museum.

roasting blue camas bulbs which once grew in abundance in the Snake River lowlands.

Research has proceeded at the site even though it has again been buried underwater since 1977. A year ago the Jackson Hole Museum received a grant from the Wyoming Council for the Humanities to obtain an oral history from Lawrence regarding his collections. Lawrence, now 85, lives in a nursing home in Lander, Wyoming, but his memory is very sharp.

The Museum has accumulated about 45 hours of taped conversation, from which they have been able to identify three archaeological sites not found by Wright's survey crew.

Robert Rudd, curator of the museum, said that as a result of this work with Lawrence, "I can go stand on sites you'd never find because of siltation."

Rudd said that this winter the museum is working with Lawrence to collect data that should help unlock the oldest sites in the area.

New possibilities for the exploration of the Lawrence site have opened

up now that the Bureau of Reclamation has restricted Jackson Lake 24 feet below its maximum level until the dam safety problem is solved. This past fall teams from the Midwest Archaeological Center in Lincoln, Nebraska surveyed the Jackson Lake shore for potential research sites. More field work is planned for next summer.

Regarding excavation of the Lawrence Site, Grand Teton National Park Superintendent Jack Stark said it was "certainly a possibility."

"It may be the last opportunity for a long time to get to it (the Lawrence Site)," said Stark.

According to Tom Marceau, archaeologist with the Wyoming Recreation Commission, the Lawrence Site has not been officially declared eligible for the National Register of Historic Places. However, he said the site had an informal listing of eligibility and he expected it would be formally nominated for the register after field survey work was completed in 1985.

--B.B.

Jackson Dams...

[Continued from page 13]

you see today. From 1913 to 1916 the Bureau superimposed a new concrete section -- this one 222 feet long and 78 feet high -- over the old dam. The renovation raised the dam crest to its present 6780-foot elevation; the extra 20 feet enlarged the reservoir capacity from Crowe's 380,000 acre feet to 847,000 acre feet to help irrigate 1.2 million acres of the Idaho Minidoka Project.

The increase in the height of the dam required a 2000-foot long addition to the north embankment; without the extension, the water would have spilled around the side. To build the extension, material for the dikes was sucked up from the bottom of the lake by floating gold dredges.

Bureau engineers were not entirely satisfied with this hydraulic fill technique. One inspector said the north dike did not possess "a good degree of stability" but "there is little time to effect any improvements." That was almost 70 years ago. Today the Bureau apparently has found both the time and the money for the improvements.

The gates on Dam Number Three were closed in the summer of 1917, and teams of engineers were at the site to document inflow, outflow, seepage and shrinkage. Few people, however, were on hand at the other end of the valley to report the effects the rising water had as it inundated 8000 acres of lowlands at the north end of Jackson Lake.

Historian David Saylor said the reservoir "killed thousands of trees and left their gaunt skeletons to outline the shore." He also said that at low water, uncovered tree trunks and decaying shoreline vegetation became more conspicuous and foul-smelling mud appeared on the beaches.

A U.S. senator visiting the site put it more colorfully: "Why, Liver Pill signs on the Statue of Liberty wouldn't be half as bad as this."

The dead trees were not cleared out of the reservoir until the 1930s. A 1936 National Park Service news release said it took 100 Civilian Conservation Corps boys four seasons to clean up and burn about 7000 acres of debris on Jackson Lake.

Back at the dam, there were indications that considerably more than 7000 acres of mudflats might be exposed at any moment. Then as now, the north embankment was the

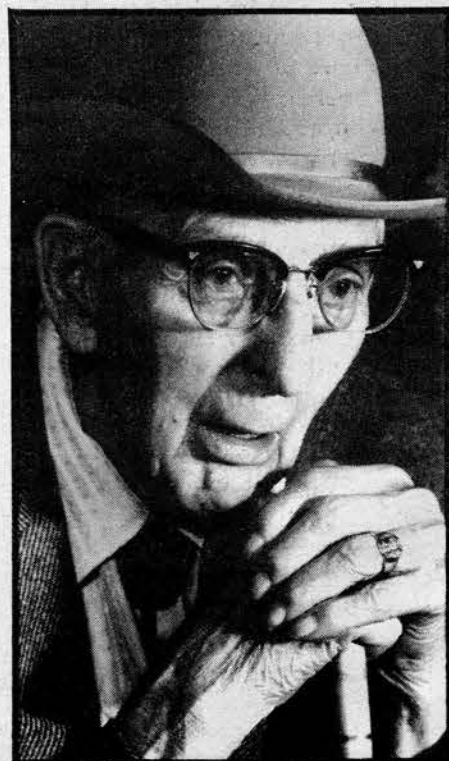
problem. Bureau reports show that in 1928 and 1929, additional gravel was placed over the downstream toe, and during 1930 to 1933, another 4000 cubic yards of riprap was dumped on the dike.

Today, the hydraulic fill method of dam construction is thoroughly discredited. By the early 1970s, at least five major dams constructed that way were seriously damaged in moderate to severe earthquakes.

After performing tests at the Jackson Lake Dam, the Bureau determined the north embankment would not be safe in an earthquake of Richter magnitude 5.5 or greater. With the Teton Fault within four miles of the dam, and three other major fault zones 28 to 65 miles away, geologists calculated that the probability of a damaging quake within the next century is 40 percent. As a result, the reservoir is now restricted to 24 feet below its planned capacity until the safety problem is resolved.

□

Betsy Bernfeld is a freelance writer who lives near Grand Teton National Park.



W.C. 'Slim' Lawrence

Olie Rinker

Betsy Bernfeld

16-High Country News -- February 4, 1985



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This is a request for comments by the oil and gas industry, consulting archeologists and other interested parties on proposed Notice to Lessees [NTL-MSO-1-85] for the administration of cultural resource protection as it pertains to oil and gas operations.

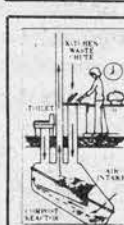
The proposed NTL interprets the laws, regulations, and orders related to cultural resources and oil and gas operations and provides guidelines to operators when they conduct cultural resource surveys.

Copies of the draft NTL [5 pages] are available from Mr. Del Fortner at:

Bureau of Land Management
Montana State Office
Division of Mineral Resources (922)
P.O. Box 36800
Billings, MT 59107
Phone: 406-657-6291

Any questions or verbal comments can be directed to Mr. Fortner between 7:30 a.m. and 4:00 p.m., Monday through Friday.

Written comments must be received at the above address by March 15, 1985. Published by *High Country News* Feb. 4, 1985.



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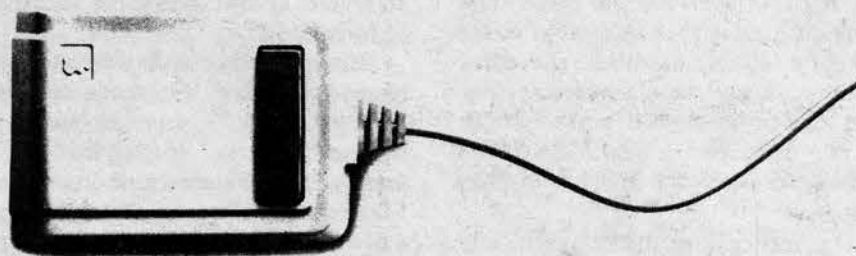


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