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Water Dictates Western Future

by Tom Bell

Water — the lack of it and the need for it — looms ever larger in the West's developing energy situation. Water is used in huge amounts to generate electricity in coal-fired plants, to gasify coal, to liquefy coal, and to develop oil shale. But the arid West has not been overly blessed with abundant amounts of water.

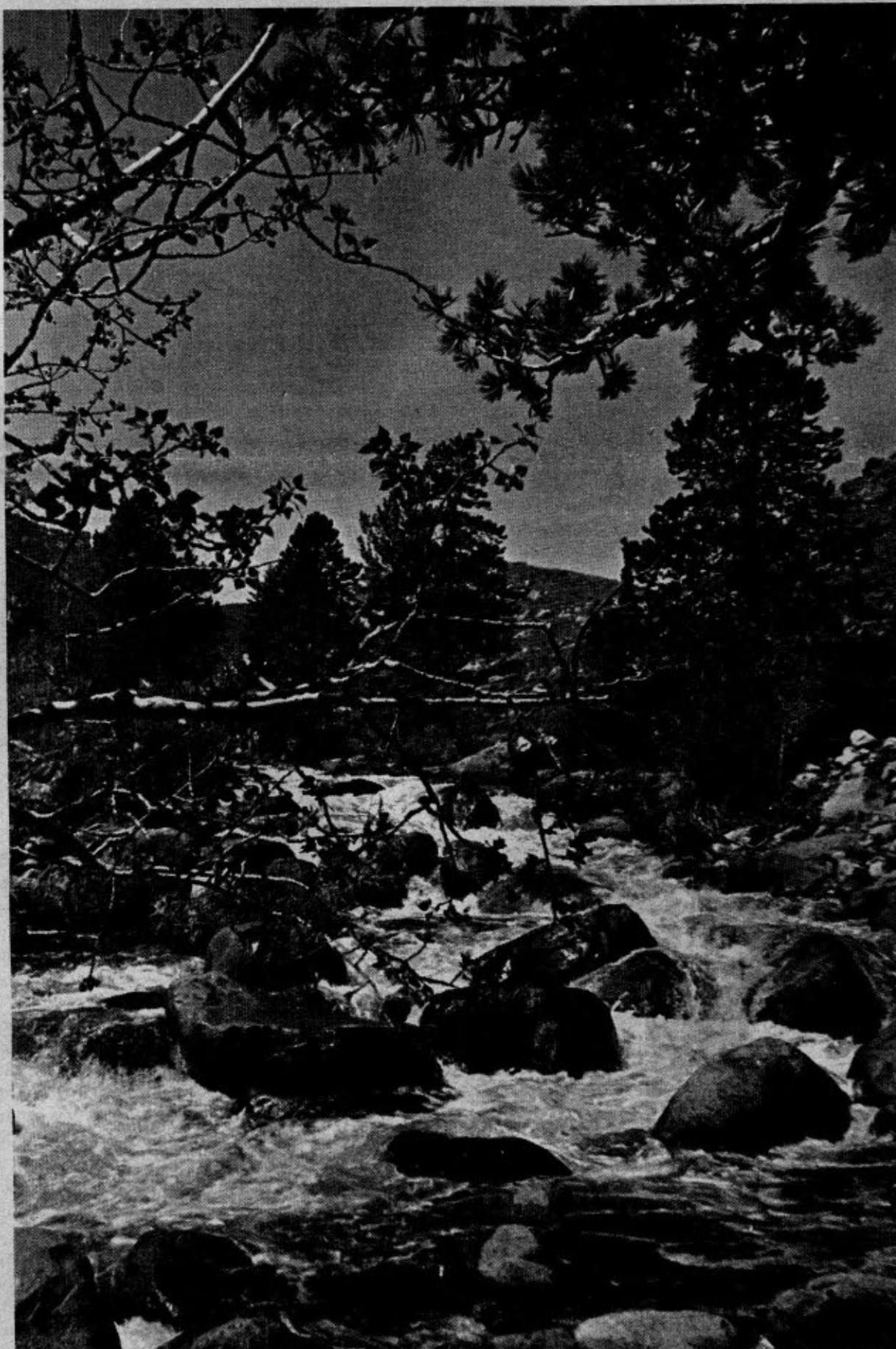
The Fort Union geological formation of Montana, North and South Dakota and Wyoming holds one of the largest deposits of coal in the world. Literally billions of tons of the coal is low in sulfur and can be easily strip mined. So now that oil reserves are either running low, or are held by Middle East nations, the potential for profits in coal are enormous. That is, the profits are potential if the costs of strip mining can be held down, and the water for development can be obtained as cheaply as possible.

Similarly, the development of oil shale to produce literally millions of barrels of oil is going to require rivers of water. In fact, so much water may be required that a recent Atomic Energy Commission report questions the development of oil shale. A draft report says that even if all the water available in Colorado, Utah and Wyoming were used to process the shale, it would only be enough to produce three to five million barrels of oil daily. The report said a more reasonable level of development would be closer to one million barrels of oil daily by 1983. It is reasonable simply because the available water has to be shared with other uses. (The AEC later qualified the statement on the report by saying the limiting factor of water would only be applicable to above-ground retorting. The AEC is encouraging in situ retorting by the use of underground nuclear blasts.)

A senior technical specialist for Hercules, Inc., at Salt Lake City has also suggested that oil shale development may be impractical for lack of water. Dr. Billings Brown says, "It would take all of the water in the Colorado River to cool the equipment needed to get oil from the oil shale, and that is something you don't read about in the newspapers."

There is no doubt that water is one of the key elements in impending development. But not only is water the key to energy development, it is the key to the irrigated agricultural industry of the West. Look down from above on the vast majority of the western landscape and you see the irrigated farmlands concentrated for the most part along the natural waterways. Only where the works of the Bureau of Reclamation have diverted water onto lands some distant from the live streams do you see other irrigated lands. And rainfall is so sparse that diversified agriculture cannot exist except where water

(Continued on page 4)



Most western water issues from the mountains, out upon the plains and through the deserts. All along the way, it is put to work for man's purposes. But the time may now be at hand to take stock of what we have, how we are to use what is available, and how we will be allocating water for society in the years ahead.

HIGH COUNTRY

By Jane Bell

Water is so precious in the arid West that men have been shot in disputes over its use. The question of water rights first arose in early western gold mining districts. At about that same time, water rights for irrigation were established. First in time, first in right became a by-word in the lexicon of water appropriators.

It soon became apparent to some early administrators that some kind of order had to be brought to water appropriations, and some kind of record kept. Only by establishing a system and keeping records could the prior rights of early appropriators be protected. Not all states kept good records, including Montana. It is now in the process of reviewing and adjudicating water rights, particularly for irrigation.

Even the keeping of records does not tell the whole story. Some western streams were over-appropriated. That is, more water was appropriated from the stream than natural flows could supply. And not all water appropriated for use was always put to use.

The result is that no one actually knows how much water is being put to use. Flow records have been kept by the United States Geological Survey long enough to know what is available at certain points along a river system. Most have assumed from those records that there is excess water flowing by and going to the ocean. And that, in most westerners' eyes, is a total waste of a precious resource.

Another problem of western water flows is its fluctuation. Much annual precipitation falls as snow in the mountains and higher elevations. As spring comes on with a rush, large volumes of water fill the streams and rivers. By August, a good many of the same streams may contain only a trickle. And since minimum flows for fisheries and recreation were unrecognized in earlier days, some streams are completely dewatered by the end of summer. During dry years, water becomes very short on some smaller streams.

The answer to this was the Bureau of Reclamation. By building big dams, several problems could be solved. The Bureau could capture the supposed excess flows, prevent flooding, and generate cheap hydropower to be sold to Rural Electric Cooperatives. The federal dams not only evened out the flows but supposedly stored all of that excess water for additional irrigation. As an added attraction, huge recreation areas were created.

And so the Bureau (along with the Corps of Engineers) became one of the biggest beneficiaries of the federal pork-barrel system. The Bureau became the darling of western Congressmen. Nothing could be finer than a huge, multi-million dollar Bureau project in a westerner's bailiwick.

As with all other exploitive deeds, the choicest projects were accomplished first. Those that followed have become so questionable and marginal that the Bureau has found itself in a continuing series of environmental lawsuits.

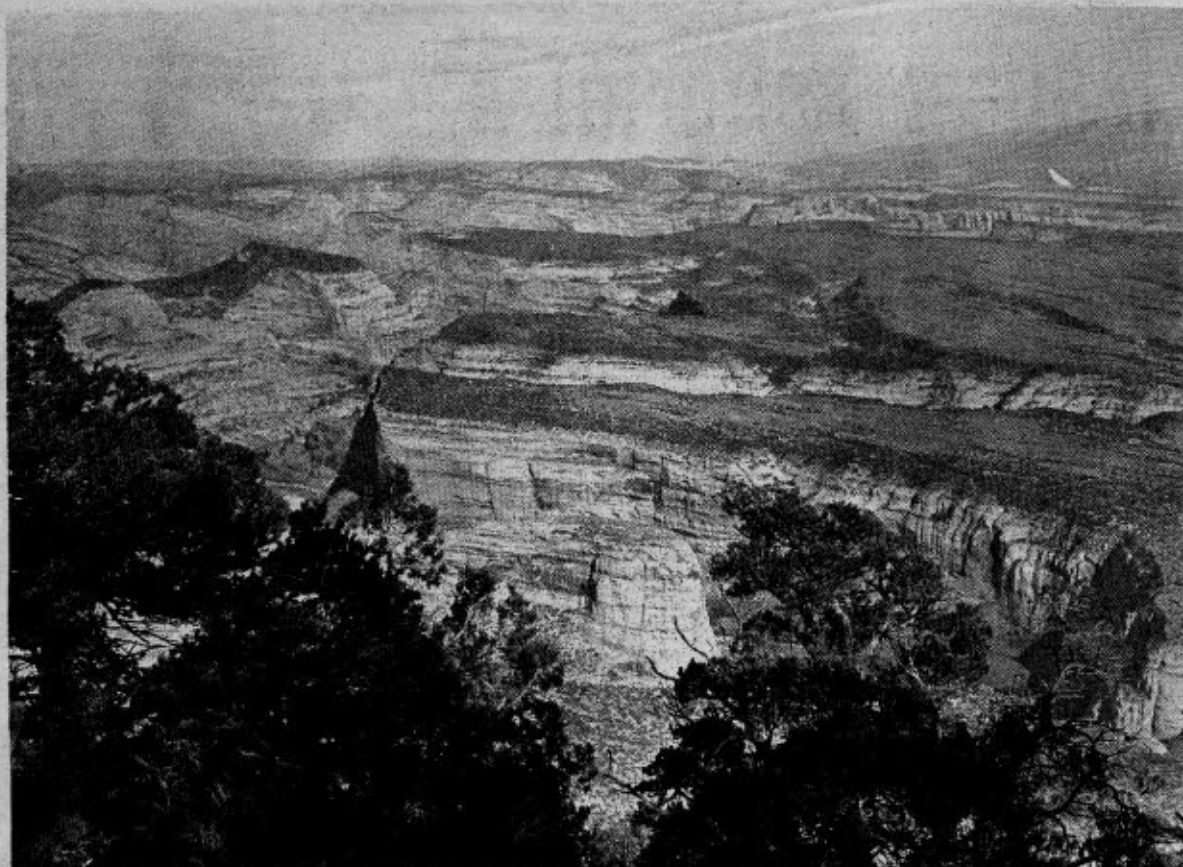
Undaunted, the Bureau saw a way to continue to exploit the pork-barrel. This time, they turned a cold-shoulder on agricultural interests and took up quarters with the energy industry.

The energy crisis seemingly has played right into the Bureau's hands. The experts at building dams and huge irrigation projects now sell their wares to the energy industry to build additional dams and equally huge aqueducts.

The question becomes, how do you supply all of the water for all of the grandiose projects? The Colorado River has already been oversold. It appears the Upper Missouri is going to be next.

Of even more consequence is the nagging question that surely must afflict some officials and bureaucrats. And that question is, what kind of energy and food crisis could be precipitated if a prolonged and widespread drought should afflict the West in the 1990's as it did in the 1930's? With a great dependence on fuels from coal and oil shale, as well as the contribution to the nation's food supply of western irrigated agriculture, what would happen if the water supply was suddenly reduced?

It would appear that somebody ought to be keeping track of the store. The nation is flirting with a danger as ominous as the Middle East powder keg when so much dependence is being placed on the precious water of the arid West.



Dinosaur National Monument in Colorado and Utah is on the headwaters of the Colorado River. These magnificent canyons sparked one of the earliest environmental battles when water developers wanted to put a dam at Echo Park. It would have backed waters into the canyons of both the Green and Yampa Rivers.

Letters



Dear Editor:

Thanks for the interesting article about Louise Dunlop's monumental battle to stop strip mining which, as you well know, is destroying vast areas of our country. In Washington, Dunlop is regarded as one of the Capitol's most effective lobbyists, and for years I have relied on COALition Against Strip Mining as a source of valuable information.

Nevertheless, I feel that I need to add a few thoughts regarding Dunlop's reference to coal mining in Utah. If there's "going to be a heavy dependence on coal," Utah's bituminous, low-sulfur coal, 96 per cent of which can only be mined underground, at first glance might be considered an attractive alternative if compared to that which would be strip mined in Arizona and New Mexico. Unfortunately, no one has ignored Utah's underground coal reserves, as suggested by Dunlop. On the contrary, for the past decade with encouragement from the Department of Interior, the subsidiaries of Southern California Edison, San Diego Gas and Electric, and Arizona Public Service have held federal and state leases on over 46,000 acres on the Kaiparowits Plateau, a field that promises a yield of over six billion tons of coal which is more than enough to fuel several 3,000 MW mine-mouth powerplants far into the twenty-first century. El Paso Natural Gas is there too, exploring an adjacent area to determine the feasibility of constructing a number of coal gasification plants. Recently, with the encouragement from a group of Utah municipal utilities, the cities of Los Angeles, Anaheim, Burbank, Glendale, Pasadena, and Riverside are considering the construction of a 3,000 MW powerplant which would burn coal from either the North Kaiparowits field or from a location not far from Capitol Reef National Park.

The utility industry has maintained a slow but determined pace as it systematically and

inexorably gears up to stealthily make use of the public domain. One of industry's remaining tasks is to convince the few who still doubt that total-electric living is far better than preserving the clean air, the magnificent vistas, and the National Parks and Monuments which ring the Kaiparowits Plateau and other nearby coal reserves. To accomplish that objective, a number of sympathetic federal and state agencies join utility executives in insisting that there's a great need to prepare for a possible future electrical energy deficit which may slow the growth of Phoenix, Tucson, Las Vegas, San Diego and the Los Angeles Basin.

If we are to preserve one of the nation's last outstanding recreation areas, we must demand a moratorium on both Western strip mining and underground mining until legislation effectively brings about a sizeable decrease in electrical energy consumption and a commitment to renewable and non-polluting solar energy alternatives. We can begin by insisting that the President's Council on Environmental Quality's "Half and Half Plan" be adopted. As CEQ's Chairman Russell Peterson recently pointed out, "Because energy production and use is the main contributor to despoiling the environment, we say that we should plan for markedly reduced growth in the use of energy. . . ." Due to last winter's reduced demand in the Los Angeles area, Southern California Edison has decided to delay indefinitely the expansion and new construction of all their oil-fired units. If the Administration were to institute even a modest energy conservation program, it is very likely that the unique qualities of the Southwest would not need to be sacrificed.

Marga Raskin
Energy Conservation Chairperson
Unita Chapter, Sierra Club

Guest Editorial



Reprinted from the BILLINGS GAZETTE, April 25 1974.

Double Standard on National Resources

Now we are getting the message — national needs or wants come ahead of regional or state desires.

One of the energy company spokesmen, a Kenneth Reim of Getty Oil Co., said so at a public meeting in Billings this past week.

Reim emphasized that 200 million people own the coal in our region, it is a national resource.

Our sincere thanks to Geologist Reim for saying so. We've always felt that natural resources were a national resource, too, not just the property of the energy giants to do with what they please regardless of how others might feel.

Now that that has been established by mutual agreement, let us include some other things that belong to the public, too. Take air and water, just for starters.

Energy companies haven't been too concerned about clean air and clean water until of late when an irate citizenry rose up to call a halt to their dirty work.

The fact of the matter is, the energy companies still are battling for the right to pollute our air and water. If you doubt it, talk to your congressmen to learn what they are trying to do to scuttle reasonable legislation concerning coal strip mining practices.

We don't think one area of the nation has the inherent right to stink up and befoul another for its own convenience. That may seem strange to an energy giant spokesman but not to us.

We think the rights of the people in this area

deserve to be respected.

Montana has reasonably clean air, most of the water is potable and the land sustains life to varying degrees, largely dependent on availa-

ble water.

Strange as it may seem to those whose vision is obscured by dollar signs, we'd like to keep it that way.



Editors:

I don't believe that poll by Don Jones Associates (results printed in 3-29-74 High Country News) that 69.3% of Utah's residents favor building the Kaiparowits power plant even if it means relaxation of environmental standards.

From attending hearings on these plants — including the Senate Interior Committee hearing on these plants in Salt Lake City — and seeing the large number of highly vociferous people who were totally against such plants, I cannot believe the announced conclusions of this poll. At this hearing most every individual presenting a statement in favor of such plants had a direct economic interest and benefit from seeing initiated their construction in the canyon country of southern Utah.

Very few people without such interest supported any coal fired powerplants to supply southern California and Phoenix with "clean" electric power; while there were some hundred individuals opposed to the construction who did not even get to speak because of the hearing being cut off after two days and moving on elsewhere.

I cannot believe the announced conclusions of this poll because I cannot believe that the average citizen of Utah — who will not gain a single appreciable direct benefit from such plants —

would vote to bring into the state such tremendous sources of dangerous air contamination.

The Kaiparowits plant at the original announced power output of 6,000,000 kilowatts would burn a ton of coal every 1.7 seconds or 54,000 tons a day. It would be the first, if they were to get started in southern Utah, of the world's largest coal burning installations.

Plants of this size, with the anticipated control equipment, disseminate into the atmosphere many hundreds of tons of air contaminants daily including very fine particle matter, which tends to get breathed in and trapped in lungs: sulfur and nitrogen oxides which are irritative and destructive of respiratory function; and mercury, cadmium and other elements which are very dangerous to breathe even in diluted amounts.

No controls yet exist to trap most of this contamination produced. No controls are anticipated for the foreseeable future which will do this most difficult task. For the equipment that does exist (precipitators and the few installations with so-called scrubbers) they, when working and working as well as they are given credit for, tend to trap only large particle matter. The fine and most dangerous particles are injected into the atmosphere together with the greatest part of all the other contaminants

mentioned above, most of which are gaseous and thus not visible as they leave the stack. I cannot believe that the great majority of Utahans want this for their state. I cannot believe that to benefit a few (financially), the great majority of Utah's citizens would endorse the world's largest sources of air pollution being constructed and operated in their state — air pollution and degradation which would harm everybody, and even drive away many of the visitors who come to experience southern Utah's incredible landscape.

Sincerely,
Harris Heller
Boulder, CO

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Water Dictates ...

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can be diverted from streams or pumped from underground.

Impending shortages of water extend all up and down the Rocky Mountain area and into the Great Basin states. Even the seemingly water-rich areas of North and South Dakota and Nebraska may begin to feel the pinch as huge energy developments take place. But nowhere is lack of water already beginning to raise serious questions more than in the Colorado River Basin. There, overcommitments of available water, loss of water from evaporation and into the banks of huge reservoirs, increasing salt loads, and now a national exercise known as "Project Independence" may have already stretched society beyond its limits.

Extensive use of all available water from the Upper Colorado River will further jeopardize water supplies to the Lower Basin states and Mexico. Controversy is now raging in Washington over a diplomatic pact to supply Mexico with water usable for irrigation on its side of the border. Since 1960, the water Mexico receives has increased in salinity from 800 parts per million to over 1500 ppm. Under a 1944 water treaty with Mexico, this country is obligated to allow 1.5 million acre feet of water a year to flow to its southern neighbor. Last August, the two countries signed an additional agreement whereby this country was committed to improving the quality of water received by Mexico.

But that agreement has raised bitter controversy in the Upper Colorado River Basin states. The agreement is now being translated into action. An administration proposal calls for at least one desalting plant, the complete lining of 49 miles of the Coachella Canal, a 57-mile extension of a bypass drain to carry brackish water to the Gulf of California in Mexico, and the purchase of thousands of acres of irrigated land on the Yuma Mesa in Arizona. The purchased acres would be retired from production.

Sen. Peter Dominick of Colo. says the administration bill is a "giveaway to another country of water assets of the Colorado River Basin states and millions of dollars of the nation's money in capital costs of facilities..." Dominick says the huge desalting plant (one of the largest in the world) would cost \$139 million, not counting interest during construction. It would cost \$10 million a year for operation and would require 35 megawatts of electrical energy in an energy-short region.

The director of the Colorado Water Conservation Board, Felix L. Sparks, says the Mexican agreement and the Nixon Administration proposal would effectively halt further development of any sort in the Colorado River Basin. He says it would deprive the states of water entitled to them under the Colorado River Compact.

Recently, R. C. Fischer, secretary-engineer for the Colorado River Water Conservation District, said Colorado isn't going to be sacrificed just to provide both water and energy to California and Arizona. Fischer says the various compacts regulating Colorado River water may have to be re-examined if Colorado is expected to provide both water and energy. His sentiments could well be echoed by spokesmen from both Utah and Wyoming.

CONTROL TO COST

The seven states of the Colorado River Basin have formed a Committee of 14, composed of two water experts from each of the states. That Committee is backing proposals to not only reduce the salt load in water going to Mexico but

also water reaching the lower basin states of Arizona and California. The Committee wants four upstream salinity control projects constructed at a cost of about \$146 million. It also wants planning completed on 12 more salt control facilities. A complete salinity control program is conservatively estimated to cost a half billion dollars. Those benefits of course would accrue to all the basin states.

The largest of the four salinity control proposals would cost about \$73 million. It would be a program to improve irrigation management on irrigated lands in the Grand Valley of Colorado. This is the same valley which drains much of the oil shale region.

In 1956, Congress passed the Colorado River Storage Project Act. Under that Act, the Colorado River waters were to be dammed and diverted according to the various allotments to the states. Soon thereafter such huge dams as Flaming Gorge in Utah and Wyoming, Glen Canyon in Arizona and Utah, Navajo in New Mexico, and the Curecanti Unit in Colorado were authorized. And such grandiose projects as

CAP and CUP

Today, the Central Arizona Project is being built at a cost far exceeding the \$1.3 billion originally authorized. It will withdraw in excess of one million acre-feet a year to supply municipal and irrigation water for the areas around Arizona's two largest cities, Tucson and Phoenix.

Work is just now getting underway on the Central Utah Project (CUP). It was originally to cost about \$760 million — today, it is estimated to be almost double that amount. It will take water out of the Colorado River Basin, through tunnels and aqueducts, and put it in the Bonneville Basin, again for irrigation and municipal uses.

The CUP is being challenged in court by the Sierra Club, Natural Resources Defense Council, the Environmental Defense Fund, and Trout Unlimited. The groups contend that the costly project will eventually entail the development and diversion of more than a half million acre-feet of water. This, they say, will be at the expense of free-flowing streams and rivers, and wildlands someday needed for recreation. They also say the additional water brought into the Bonneville Basin will lead to severe impacts from increased urbanization.

A former assistant to Interior Secretary Rogers Morton says "enormous political pressures" were applied to get authorization for the Curret Creek Dam, a part of CUP. Laurence E. Lynn, Jr., testifying at the U.S. District Court hearing in Salt Lake City, said Interior officials received the pressure from Utah Sen. Wallace Bennett and Gov. Calvin Rampton. Lynn testified the Curret Creek Dam should never have been authorized.

Colorado has four irrigation projects, costing an estimated \$350 million, that it would like to see authorized. But it also has plans for diversion of some 700,000 acre-feet of water across the mountains to Denver, Pueblo and other municipalities, as well as irrigation projects.

The San Juan-Chama Project in New Mexico is expected to divert some 110,000 acre-feet of water annually out of the Colorado and into the Rio Grande Basin.

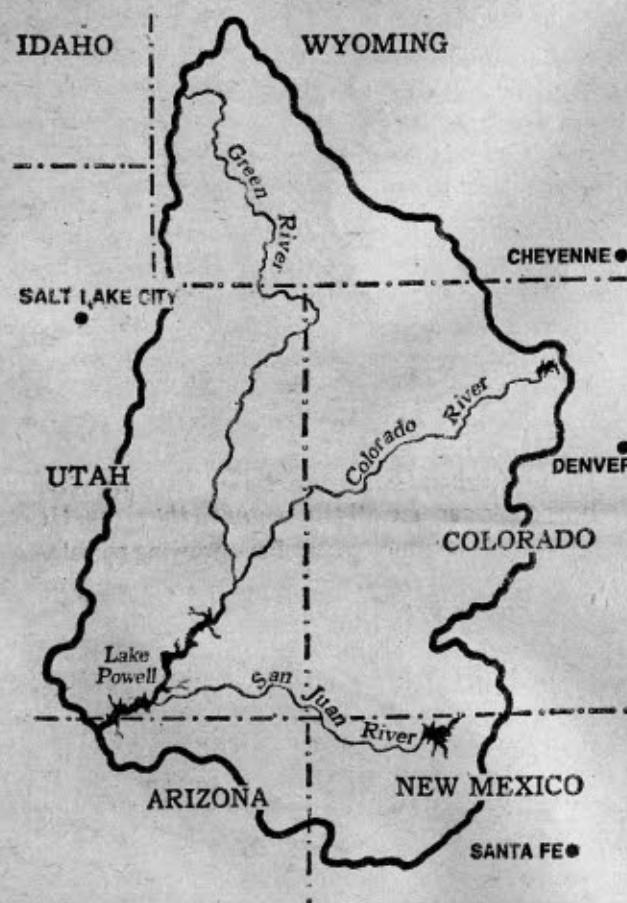
Wyoming is actively pursuing a state policy of transbasin diversion. Various plans have been put forth to divert as much as 272,000 acre-feet of water a year from the Green River (Upper Colorado) to the coal fields of northeastern Wyoming. The Wyoming Water Planning Program uses the figure of 175,000 acre-feet as a planning basis for diversion.

Altogether, the ultimate annual diversions out of the Colorado River Basin are expected to exceed 6.6 million acre-feet a year. The average annual flow of the Colorado is placed at somewhere between 12 and 15 million acre-feet.

INDUSTRY DEMANDS

While all of the existing irrigation uses, projected irrigation uses, projected and present municipal uses, and diversions out-of-basin are placing huge demands on the Colorado River, industry is just now beginning to register its demands. Recently, Deputy Under Secretary of the Interior Jared C. Carter said a 100,000 barrel per day oil shale plant would require 20,000 acre-feet of water annually. Various reports indicate the production of one barrel of shale oil will require 3½ barrels of water.

Pacific Power and Light Co. recently announced it was going to start drawing on the 35,000 acre-feet of water a year it has purchased out of the Green River. PP&L bought the water from the State of Wyoming (at \$6.50 acre-ft) for use in the 2,000 megawatt Jim Bridger powerplant, 40 miles east of Green River, Wyoming. Unconfirmed reports now indicate PP&L may be contemplating a plant of equal or even larger



UPPER COLORADO RIVER BASIN

the Central Arizona Project and the Central Utah Project evolved on the drawing boards and were authorized by Congress. The whole scheme has been described by some observers as an "exercise in distributive politics." It was the political expedient of "you scratch my back and I'll scratch yours" in spades. This was the heyday of Arizona Sen. Carl Hayden and House Interior Chairman Wayne Aspinall and other powerful westerners on the Senate and House Interior Committees. Today, their legacy of distributing the limited waters of the Colorado River are coming home to haunt policy-makers and government officials.

Ten years ago, at a Convention of American Foresters, Fred H. Kennedy, then Regional Forester at Albuquerque warned of overdrawing the Colorado. His warning came in regard to a change in forest management policies resulting in the demand for more water. He said, "The Colorado River is already overextended by having its waters diverted to the Platte, Arkansas and Rio Grande drainages plus the demand by downstream states. The Central Arizona Project . . . will further extend the capabilities of this river."

size near Creston Junction. That location would be some 60 miles further east (26 miles west of Rawlins). In that case the company may need additional water.

Wyoming bought 60,000 acre-feet from the Bureau of Reclamation and immediately sold the 35,000 acre-feet to PP&L and the remainder to Sun Oil Co. at \$5 per acre-feet. The state is now negotiating with the Department of the Interior for an additional 60,000 acre-feet for resale. Nine companies have registered interest in buying the water. All would be taken out of the Green River for consumptive uses in industry.

The State of Utah is reported to have tentatively allocated 102,000 acre-feet of water a year to the proposed Kaiparowits powerplant in southern Utah. A plant of equal or larger size is now being proposed in southern Utah by a consortium of California and Utah municipal utilities. Every 1,000 megawatts of generating capacity requires between 10,000-20,000 acre-feet of water per year.

A recent report by the Western Interstate Nuclear Board says Utah generating capacity will increase 10-fold by 1982. The increase will be from 414 megawatts now to an estimated 4,800. Colorado will increase from a present 1,922 megawatts to 5,002. Western Wyoming will increase from 700 megawatts to 3,630.

A HOLD ON WATER

Concern for enough water to go around has already moved both Montana and Wyoming to impose moratoriums on water use. Montana Gov. Thomas L. Judge asked the Legislature for a three-year moratorium on any large water withdrawals from the Yellowstone River Basin. The Legislature acted without hesitation. The moratorium applies to requests for water-use permits for all reservoirs with a planned capacity of 14,000 acre-feet or more, and to diversions from any stream of amounts greater than 20 cubic feet per second. The prohibition does not apply to either municipal or agricultural withdrawals. In asking for the moratorium, Gov. Judge said the "water rush" was on and that it posed a serious threat to the state's agricultural industry.

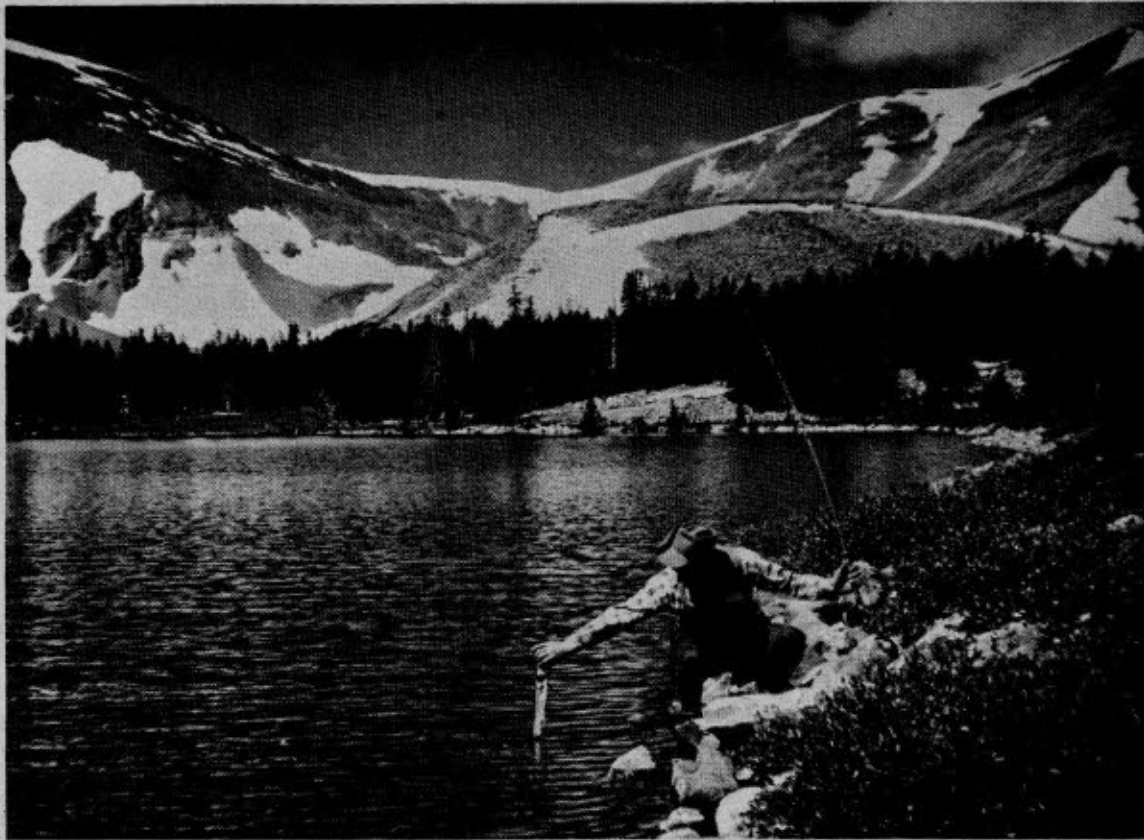
Two Montana legislators have had second thoughts about the imposed ban. Rep. Allen Kolstad, president of the Montana Water Development Association, says Montana could lose its water to North Dakota. He says North Dakota could establish beneficial use for water flowing through Montana and therefore preempt the water for later use. His thoughts are echoed by Rep. James P. Lucas, twice speaker of the Montana House.

Following upon the Legislature's action, the Montana Fish and Game Department announced it would seek a reservation of waters in the Yellowstone River. The reservation would require minimum flows to protect fisheries, wildlife habitat and recreational opportunities. The Department has the authority under a 1973 water-use act.

Authorities say other reservations may be made by the Department of State Lands for irrigation and development, the Department of Health for preservation of water quality, and even the Department of Highways for preservation of scenic values important to the tourist industry.

Another significant factor has also entered the scene — Indian water rights. A 1908 Supreme Court case led to what is known as the Winter's Doctrine. That doctrine generally declares that any waters rising upon, flowing through, or bordering Indian reservations are reserved to the Indians.

The question of Indian rights as opposed to the rights of states came into clearcut conflict in March. The setting was again the Little Big



Many lakes and streams in the High Uintas of Utah would be disrupted or destroyed if the Central Utah Project were built in its entirety. The water would be diverted from this mountainous region in the Colorado River Basin to the Wasatch Front Range, already crowded with people.

Horn River, where history was made nearly 100 years ago. The Little Big Horn originates in Wyoming but enters the Crow Indian Reservation where it crosses into Montana. The Crow claim the paramount right to all waters flowing through the reservation. And the right applies to all present and future needs. They claim the right through an 1868 treaty with the U.S. government.

Crow Tribal chairman David Stewart says his people can use all the water in the river. He cites needs for more water for a growing population, for a local industry, and for irrigation of an additional 130,000 acres.

At issue is the application of a Wyoming development firm to build a reservoir near Parkman, Wyoming. The firm has already been granted permits to divert 44,000 acre-feet of water from the Little Big Horn. The water is said to be related to proposed coal gasification plants.

The State of Wyoming claims constitutional and statutory authority to permit appropriation and use of any waters within the state. The Crow have warned publicly, in newspaper notices, that anyone planning to divert water does so at the risk of a legal suit.

Late in March, representatives of 17 Indian tribes met in Billings to form an alliance for mutual protection of their natural resources. One of the big orders of business was to draft a definitive statement on Indian water rights. Out of that came a conclusion that Indians are being forced to make some major development decisions with insufficient data.

WYOMING'S EFFORTS

Early in the session of the Wyoming Legislature, Rep. William Holland of Buffalo introduced legislation which would have prohibited transfer of water rights from irrigation use to industrial use until April 1, 1975. The bill would have also placed a limitation on permits to withdraw water from underground aquifers. The bill never got out of committee.

Before the session was over, the Legislature had approved the taking of 15,000 acre-feet a year for a 1,000-mile coal slurry line to Arkansas. But the approval was a tentative one for the one line and Rep. Holland was successful in an amendment much like his bill. The Legislature approved the amendment to limit underground

water withdrawals to 6,000 acre-feet per year in any one county until April 1, 1975.

The proposal for a coal slurry line came as almost a complete surprise to the public and most state legislators. This was in spite of the fact that Energy Transportation Systems, Inc. was already drilling test wells in eastern Wyoming, near Lusk. ETSI, the public found out, is a New Jersey consortium composed of Peabody Coal Co., Lehman Brothers, and the engineering firm of Bechtel, Inc. Peabody Coal is to provide the coal for Arkansas Power & Light Co. from its leases in Campbell County.

The pipeline would originate at the site of the wells in Niobrara County, carry water to the coal mine in southern Campbell County, and carry coal in a water slurry through Nebraska, Kansas and Missouri to its destination near Pine Bluff, Ark. The 38-inch diameter line would carry some 25 million tons of coal per year to provide fuel, in part, for four 750-megawatt steam-generating units.

The entire pipeline project is estimated to cost \$2 billion, with Wyoming's share of the investment to be \$204 million. The project was sold to Wyoming on the merits of a large investment with a few highly paid employees (hence no people pollution), minimal environmental disturbance from a buried pipeline, and the use of an untapped, brackish water source. The water is to come from a series of deep (2,500-3,000 ft) wells into the Madison limestone formation. However, continuing tests indicate the production of water from the geologic formations are less than half of what was anticipated.

Approval of the pipeline was not without opposition. Knowledgeable people point out that underground water resources are generally tied directly to surface waters. These people contend that to recharge the aquifers will require more of the surface waters, and that will only aggravate the existing water scarcity dilemma.

Shortly after the Arkansas slurry line gained prominence in the news, the president of Houston Natural Gas Corp., Robert Herring, announced his company had reached a "general agreement" on a slurry line. Coal would be carried in an 18-inch slurry line from Wyoming or Colorado to the Gulf Coast. The company has coal leases in both states.

Wyoming Gov. Stanley K. Hathaway said his office had not been contacted by the Houston

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firm. The new state law on slurry lines requires state approval. The Governor said such an announcement was therefore premature. Hathaway's office also denied rumors that nine additional slurry pipeline requests had been received.

Coal slurry lines offer certain advantages to states facing large population influxes and massive industrialization. Coal can be carried to where industry and population centers already exist, and with the use of less water than industrial processes consume. It requires slightly less than a ton of water to carry a ton of coal away in a pipeline. Powerplants consume seven tons of water for every ton of coal burned. Coal gasification plants consume two tons of water per ton of coal processed.

Nevertheless, concerned observers feel Wyoming could be drained of its water resources by uncontrolled demands through both slurry lines and proposed industrialization.

There is still another concern for underground water. The huge deposits of strip minable coal in the Fort Union Formation of Wyoming, Montana, and North Dakota are also tremendous reservoirs of water. The best aquifers in the region are often associated with the coal beds. Strip mining will disturb or destroy those aquifers.

UNDERGROUND WATER

Montana Lt. Gov. Bill Christiansen says he feels there is now more concern for the underground water than for surface land reclamation. He says the major problem is not necessarily what happens on the surface, it is what happens beneath the surface as overburden replaces the porous and permeable material which constituted the aquifer.

The special National Academy of Sciences/National Academy of Engineering committee report on western strip mining also expressed concern. The report, **Rehabilitation Potential of Western Coal Lands**, said, "A matter for more immediate attention is the fact that sur-

face mining activities may disrupt ground water flow patterns and interrupt traditional sources of water supply. These direct and indirect consequences may be far more important than the ability to reclaim the actual site of the mining and should guide decisions regarding regional development."

The report considers both on-site and off-site impacts on water. In regard to the on-site impacts, it says, "Of primary consideration are the effects of soil erosion, channel erosion and the disruption of surface drainage and groundwater aquifers."

Consideration of a national strip mining act is now taking place in the House Interior and Insular Affairs Committee. Industry and Nixon Administration amendments have consistently been aimed at weakening strong provisions to prevent or ameliorate water problems associated with strip mining in the West.

As an example, the Academy report said, "In the planning of any proposed mining and rehabilitation it is essential to stipulate that alluvial valley floors and stream channels be preserved." That wording is incorporated into an amendment offered by Rep. Morris Udall and accepted by the House Interior Committee.

The amendment is opposed by industry because of the high cost and additional work required to protect the water resource. (For example, see **High Country News** editorial, April 12, 1974.) Last week, the National Coal Association called for defeat of the strip mining act, HR 11500. Carl Bagge, president of NCA, listed among the objections the following: "In arid and semi-arid areas of the West, the bill makes mine operators responsible for preserving throughout the mining and reclamation process the hydrologic integrity of alluvial valley floors. It is possible to restore subterranean water seepage, stream beds and alluvial valley floors after mining, but this bill sets an impossible task: mine and reclaim land without disturbing it."

Mining engineers do indeed say that it is possible to retain the hydrologic integrity during mining and to restore the aquifers after mining, but only at great economic cost. The mining industry obviously opposes additional costs and efforts. They say that would increase the cost of coal, and, eventually, cost of energy to consumers.

But to do otherwise than to protect the aquifers throughout the entire region will doom much of the surface economy — the grazing industry. Wells and springs over a wide area will be disrupted or destroyed unless the underground source is somehow protected.

AGRICULTURE THREATENED

At the same time that many ranchers in northeastern Wyoming and southeastern Montana are worried about loss of springs and wells, others are concerned about loss of surface waters. The high economic value of water to industry has already begun a round of purchases from agricultural interests. As this is written, Panhandle Eastern Pipeline Co. is negotiating for purchase of agricultural water out of the North Platte River. Extensive holdings of ranch lands are already in the hands of large energy industries in various parts of Wyoming.

Montana agricultural interests along the Yellowstone River also feel threatened. The average annual flow from the Yellowstone River Basin is about 9 million acre-feet. Almost half of that (4.24 million acre-feet) comes from Wyoming through the Wind River-Bighorn system and the Clarks Fork. Wyoming irrigation takes some 1.03 million acre-feet and Montana irrigation about 2.3 million acre-feet. But although the average is nearly 9 million acre-feet, there are recurring dry years when the flow in Montana is reduced to about 2.6 million acre-feet. That is barely enough for the farmers.

The energy industry's requests for water now total more than 3.3 million acre-feet. The question becomes, during the dry years who would get the water? Powerplants and gasification plants, dependent upon the available water, could take priority.

The Bureau of Reclamation and the State of Wyoming both point to more reservoirs as a way to hold excess water for use in industry. That water would then be diverted to the coal fields through an extensive system of aqueducts. The Montana-Wyoming Aqueducts report by the Bureau of Reclamation indicated that as much as 3.2 million acre-feet could be diverted to industry.

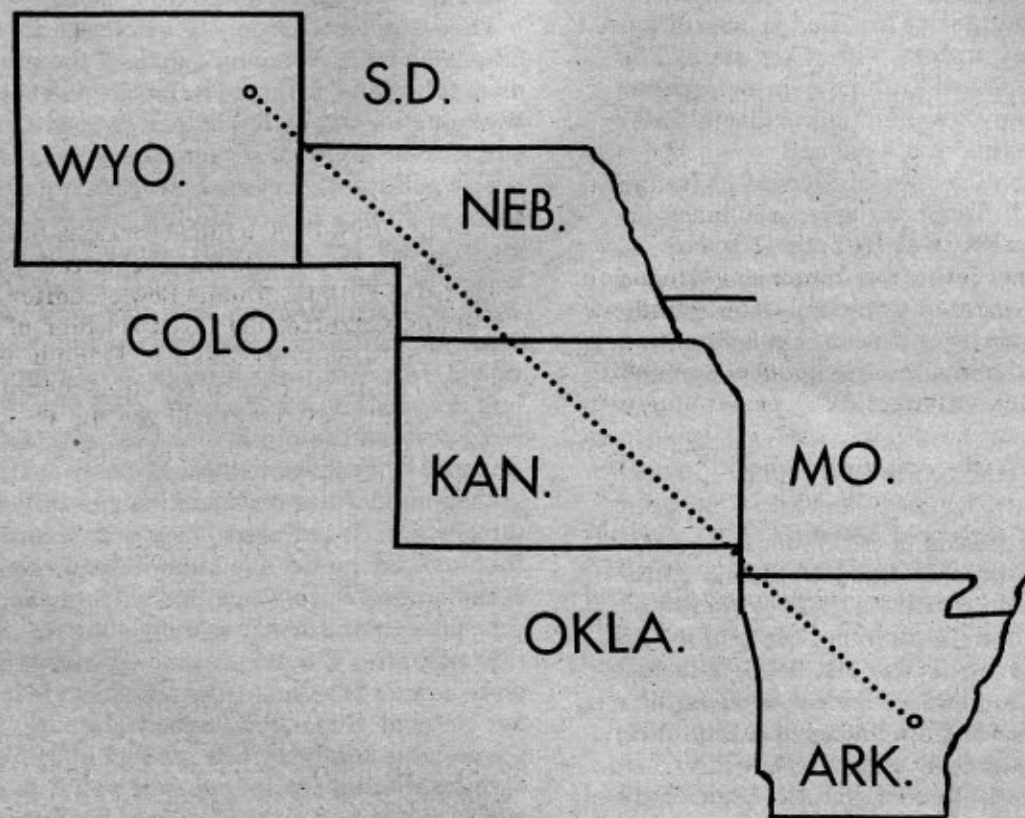
Such heavy demands for water do not reassure agricultural users. Nor does it bode well for recreational uses of the large man-made reservoirs. About half the water in the huge Lake Sakakawea in North Dakota on the main stem of the Missouri comes from the Yellowstone River. Large investments have been made for recreation by Indians on the Fort Berthold Reservation, and by whites at various points around the lake. Large draw-downs for power purposes could leave thousands of square miles of mud-flats.

Power production from six generating stations at dams along the Missouri in Montana, North and South Dakota averages nearly 10 billion kilowatt hours a year.

At the same time that huge diversions are planned for industrial uses in Montana and Wyoming, the North Dakota Water Commission says it has over 700,000 acre-feet reserved or requested for coal development. This water would also come out of Lake Sakakawea or downstream from there.

As if adding insult to injury, the Bureau of Reclamation is now in the first stage of the \$348 million Garrison diversion project. (See **High Country News**, March 1, 1974.) When finished sometime in the 1990's, the diversion will take about one million acre-feet from the river.

A companion project, the Oahe, has been authorized by Congress to divert some 444,400 acre-feet a year. It would consumptively use some 300,000 acre-feet a year and reduce hydropower from the main stem dams by 143 million kilowatt hours per year. The Bureau of



The longest coal slurry pipeline in the United States is now under study by Energy Transportations System, Inc., of New Jersey. Coal would be carried 1,040 miles from south of Gillette, Wyoming, to near Pine Bluffs, Arkansas. The pipeline was given approval by Wyoming's 1974 Legislature.

Reclamation's environmental impact statement also admits that power for pumping on the project may someday have to be supplied from coal-fired plants.

Allocation and marketing of water from the Missouri has become so controversial that a special federal study has been set up. Scheduled to report to the Missouri River Basin Commission on Feb. 1, the study committee asked for an extension until July 1. The delay was said to be needed to provide additional information for federal policy decisions, and to give the states more time to prepare their position.

MORE RESERVOIRS

In the meantime, the rush for water goes on. Recent months have brought to light applications for reservoirs throughout northern Wyoming. And while more reservoirs are planned, the water level in Yellowtail Reservoir on the Bighorn River has dropped some 35 feet, exposing extensive mud flats and threatening spawning fish.

A series of reservoirs, some of them overlapping, have been filed on Wyoming's Clarks Fork River. The filings have been made by individuals in applications to the Wyoming State Engineer. The sites coincide to some degree with Bureau of Reclamation proposed sites.

Those filings, as well as for some reservoirs in the Powder River Basin, have raised questions as to procedures in the State Engineer's office. Until the filings were revealed in newspaper articles, the public had no knowledge of the planned reservoirs. In one case, involving a reservoir in Wyoming for use in a proposed gasification plant in Montana, two ranchers were unaware that their land was involved. And in their case, the State Engineer could have issued permits for water without their ever having been notified.

Applications for reservoirs have also been filed on the Nowood River on the west slope of the Bighorn Mountains, and on Tongue River on the east slope. Wyoming Water Planning Program Report No. 10 has identified 19 sites on which reservoir permits or applications are on file with the State Engineer.

Throughout the West, the thread of development runs willy-nilly, helter-skelter, seemingly without order. And like the shortage of fuel and energy, it seems likely that uncoordinated use of such a finite resource will undoubtedly lead to shortage of water. No one seems to be keeping track of all the real and potential demands.

Worse yet, the best laid plans of men do not take into account the vagaries of nature. Cliff dwellings in the Southwest are mute testimony to the recurring patterns of drought. Society is dependent upon the basic natural resources of land, water and air. When extraordinary reliance is put on any one of those resources, as it is now being placed on water in the West, then society is placing itself in jeopardy.

This would appear to be a time to sit back and take stock of where we are now and where we are going. If we do not, the consequences could be as fateful as they were for those people of the cliff dwellings long ago.

This story of Powder River is — in reality — the story of grass. The search for it. The fight for it. The slow disappearance of it. Grass, that strange green thing which covers the earth and without which man cannot live, and the color of which, the secret of life itself, is still as much of a mystery to man as when he first saw it.
Struthers Burt
POWDER RIVER, Let'er Buck



Are present civilizations doomed to the same fate as the ancient inhabitants of this village? Overtaxing of the limited water supplies of the West may well lead historians to that conclusion.

Bulletin Board

TURN OFF JUICE

Need a light switch cover? The San Diego Ecology Centre has stickers that fit over switches to promote energy conservation. Blue letters on a white background say "Conserve Energy, Use Sparingly; When Not in Use Turn Off the Juice." They cost \$1 per dozen plus 20 cents postage or 10 cents each plus a self-addressed stamped envelope. Write to the Centre, P.O. Box 16177, San Diego, Calif. 92116.

CLEAN WATER HEARING

A public hearing on the adoption of the Wyoming Water Pollution Control Program Plan will be held Thursday, June 6, at the Ramada Inn in Casper, Wyo., at 8 a.m. At the hearing the state's water quality division will present state strategy for controlling water pollution. Copies of the state proposals are available from the Wyoming Department of Environmental Quality, State Office Building East, Cheyenne, Wyo. 82002. If you wish to testify at the hearings notify the director of the Department of Environmental Quality.

CLASSROOM IN THE TETONS

The Grand Teton Environmental Education Center is dedicated to the idea that to find our place in the natural world, we must first understand it. In programs this summer the center will offer a six-week high school environmental course, a two-week field ecology university course and a variety of short workshops. The Center is a cooperative effort between the National Park Service and the Teton Science School. For more information contact Ted Major, director, Grand Teton Environmental Education Center, Box 68, Kelly, Wyo. 83011.

BOOK ON BREEDERS

The liquid metal fast breeder reactor is the object of an economic and environmental critique in a new book by Dr. Thomas B. Cochran. Cochran, a physicist on the staff of the Natural Resources Defense Council, disputes the U.S. government's decision to give the breeder top priority in energy research. Forty per cent of the funds spent on energy research and development have been devoted to this reactor in recent years, he reports.

In his book, *The Liquid Metal Fast Breeder Reactor*, Cochran examines the analysis which convinced the Atomic Energy Commission (AEC) to push the breeder. Using the data and analyses developed by the AEC, he shows that very small changes in a number of the key variables produce large differences in predicted results. For example, he points out that the use of a 10% rather than a 7% discount rate would wipe out 75% of the benefits claimed in the AEC analysis, even if all other variables were unchanged. The most important flaw in the AEC study, Cochran says, is its failure to fully take into account environmental and safety factors.

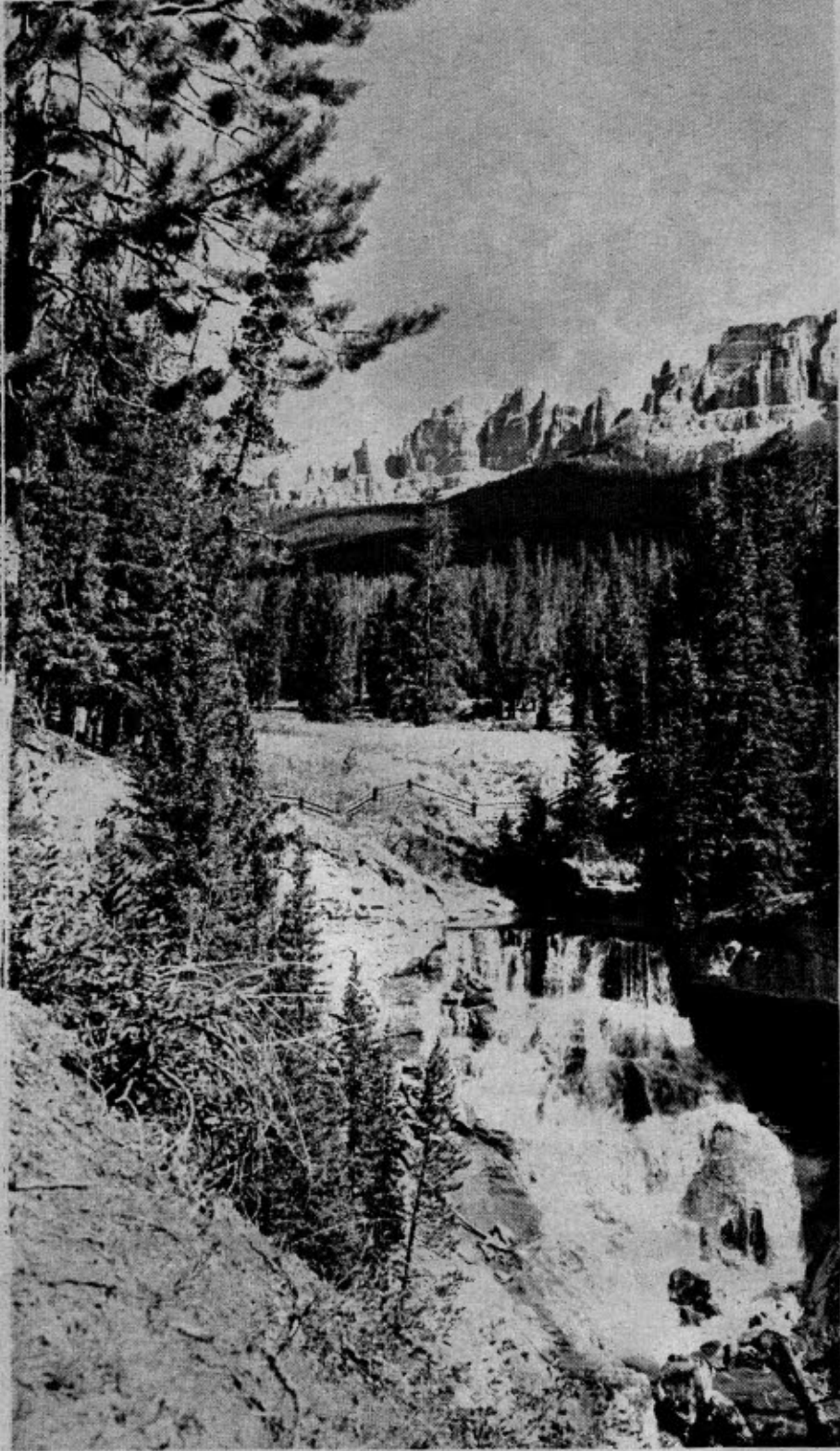
The book has just been released by The John Hopkins University Press, Baltimore, Md. 21218. It is a 285-page paperback and costs \$6.95.

WYOMING ENVIRONMENTAL CONGRESS

Citizens will gather May 18 in Sheridan, Wyo. to examine the socio-economic impact of coal development. The meeting is Wyoming's fourth Environmental Congress. Sessions will begin at the Sheridan Inn at 8:30 a.m. Speakers include Dr. Dean Kohrs, a psychiatrist who has worked in Gillette; Duane Bowler, editor of the *Billings Gazette*; Rep. Ken Hechler of West Virginia; and Ed Dobson of Friends of the Earth. Tours of coal mines are scheduled to begin at 9 a.m. the day before the Congress, May 17. For more information contact Bob and Joan Wallick, (307) 672-2320.

Rep. Ken Hechler

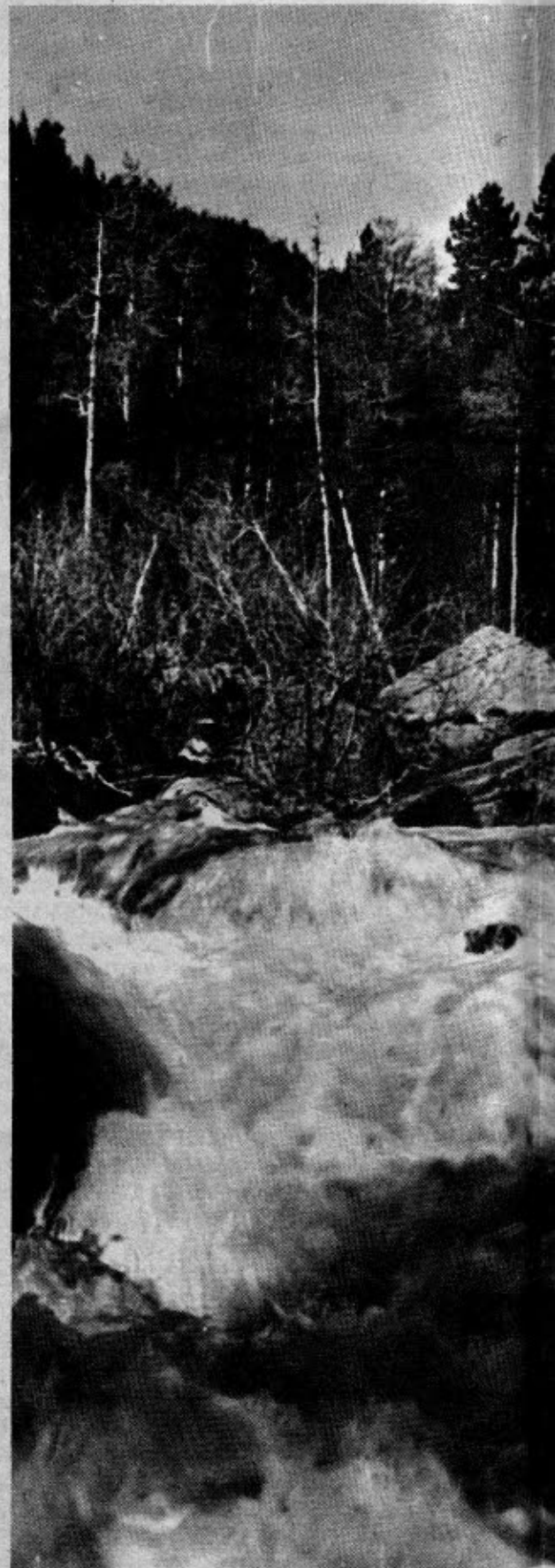
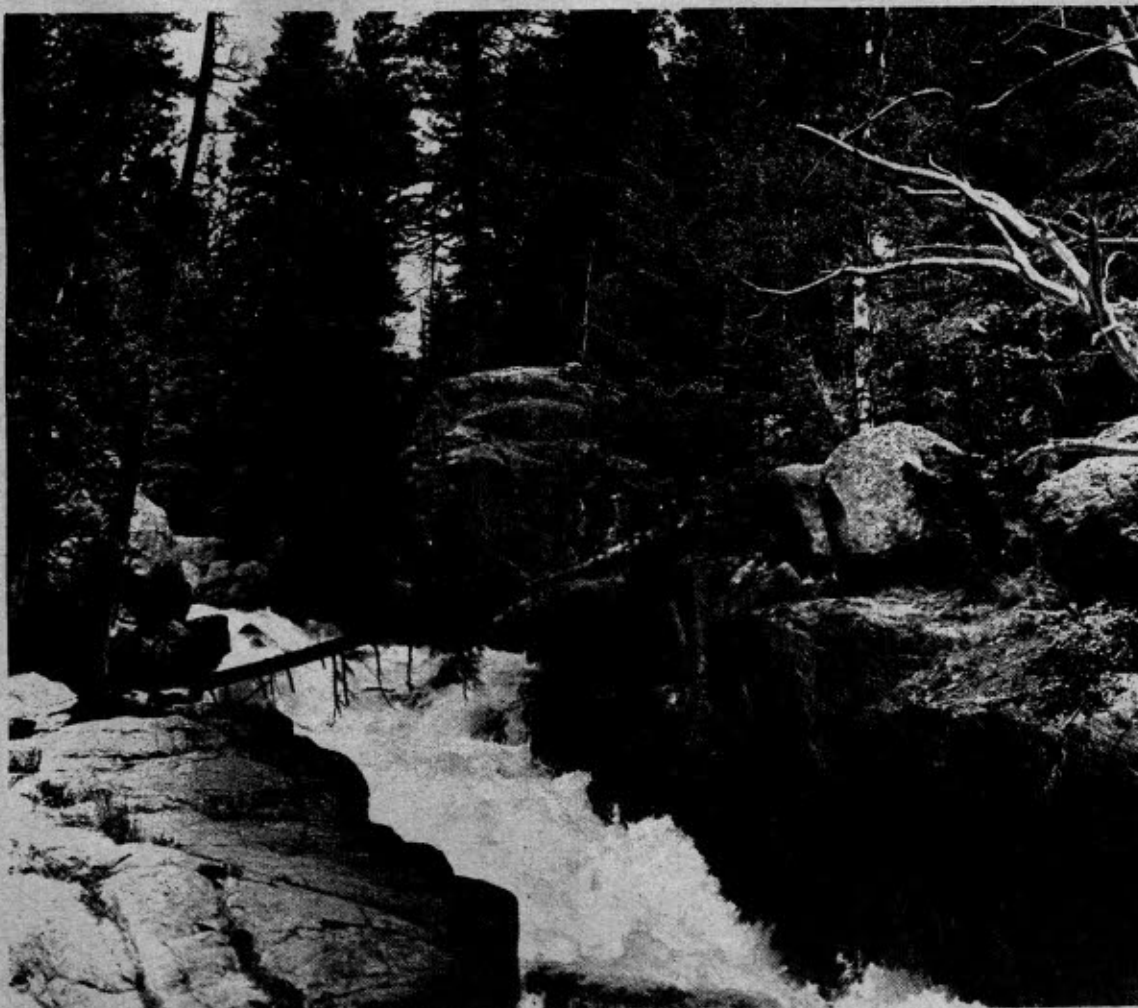




SING LOUDER

Sing louder brook! I've missed for months
Your patter fresh and gay;
Your sparkling riffles in the sun,
When you were full of play.

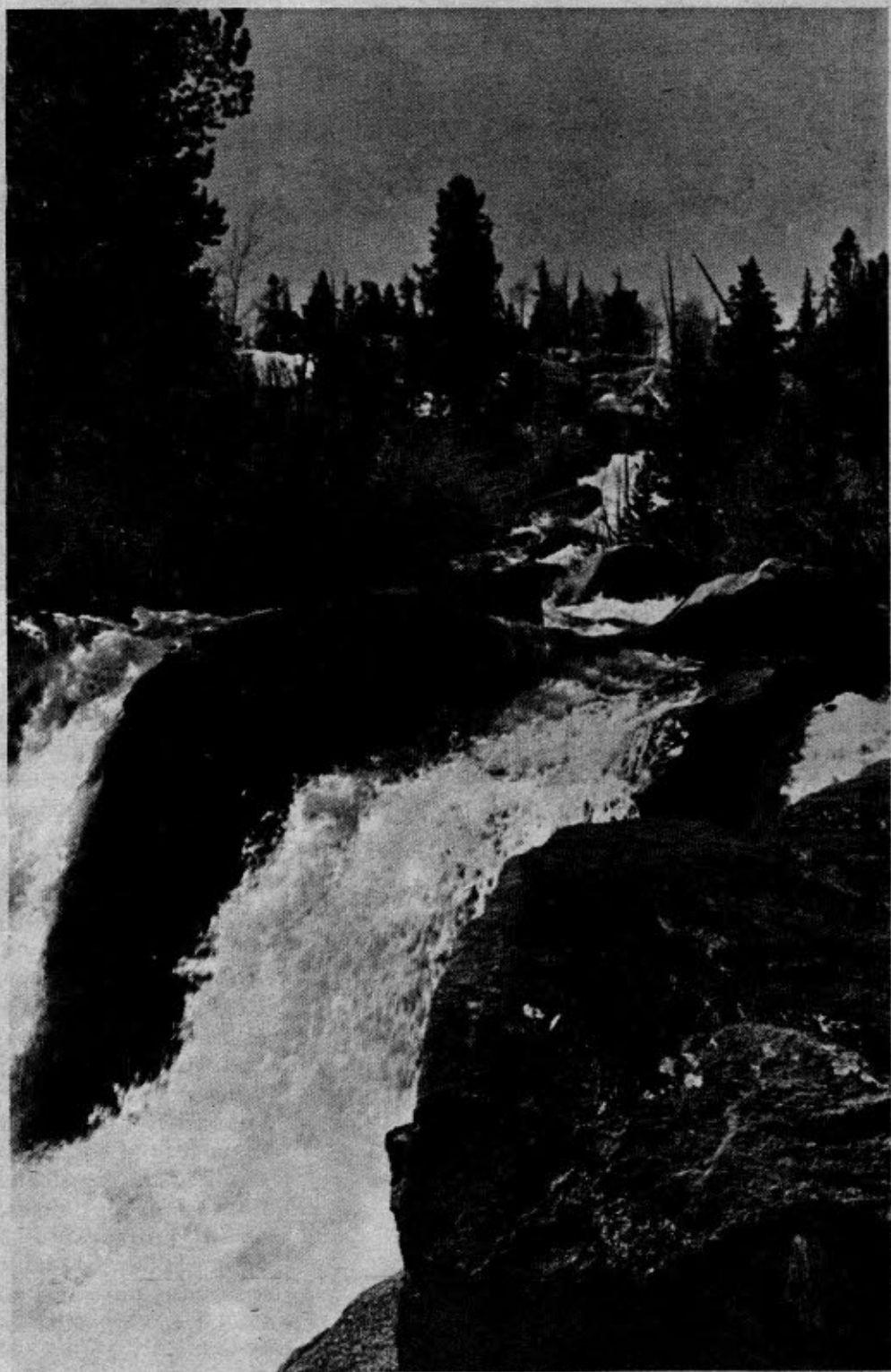
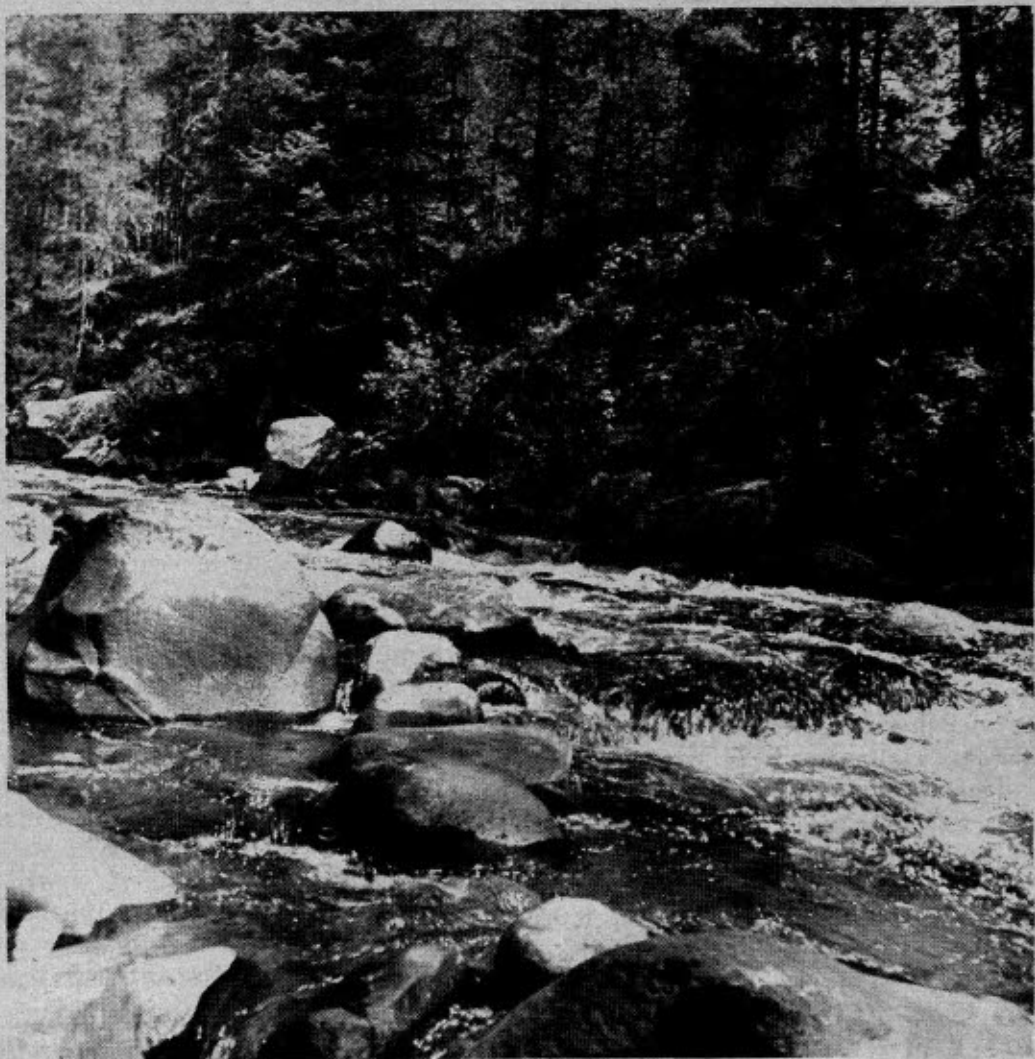
from
by



SING LOUDER BROOK

Sing louder brook! This April day
Will bring no dour storm,
The pussy-willows are in bud
And airs blow soft and warm.

from SING LOUDER BROOK
by Hans Kleiber in Songs of Wyoming



10-High Country News
Friday, May 10, 1974

Reckoning from Washington

by Lee Catterall

The government's lengthy, new prediction of the approaching era of coal development in Wyoming and Montana says very little that's new. But it does come from the government, and it forecasts the kind of problems that environmentalists have been warning us about.

That is new. The government, after all, has advocated the development — President Nixon rarely misses the opportunity — and has been at odds with the environmentalists.

The predictions are made in an 800-page document, produced so government actions scheduled later this year will comply with the National Environmental Policy Act. That law requires environmental impact statements to be written up before "major federal actions significantly affecting the environment" can take place. Planned coal development, the statement makes clear, is major to say the least.

A year ago, Casper psychologist ElDean V. Kohrs told about something he called the "Gillette Syndrome," a sharp rise in social problems caused by a population boom. The new Interior Department study agrees with much of what Kohrs said, but adds that steps can be taken to avoid the worst part of it.

The people impact caused by coal "may be both for the good and bad," it says. "Conservative social values of traditional population will have to change somewhat to accommodate more liberal values brought by newcomers. Impact is dependent on the ability of local populations to accept social change.

"Immigration of a modest number of people into a small community could result in their being welcomed and rapidly assimilated into the existing social fabric.

"On the other hand, the influx of large numbers of ethnocentric, selfish outsiders would probably have adverse social impacts. So far as radical changes affect the social fabric, rates of delinquency, crime, personality disturbance, alcoholism, alienation and rootlessness may be increased."

(Kohrs spoke of the three A's — alcohol, accidents and absenteeism — and the three D's — divorce, delinquency and depression.)

Obviously, the transformation of an area from a ranching and agricultural setting into a coal complex will shake up systems that grow from people — politicians beware: "Immigrant populations, dependent on and oriented toward coal mining and energy conversion and the influence of powerful business corporations engaged in the same and related industries," the statement says, "cannot help but threaten established political patterns."

Another part of the statement makes this strangely callous projection: "The social fabric may be altered by the influx of newcomers, and the cultural framework, for what it's worth, will never be the same again." For what it's worth?

As for the land, that pretty picture Exxon puts on the tube showing us how it plans to put the land back into shape to blend in with the Wyoming landscape is about as true to life as the jackalope, if what the statement says is right.

It may become the same again, but it could take what might seem an eternity. "The long time necessary to restore vegetation in some areas is evidenced by the fact that segments of the Salt Lake City to Los Angeles wagon trail, used in the 1800's, is still devoid of vegetation." The return of wildlife run off by strip-mining "is either completely impossible, or not feasible," until the plant life returns.



Heating, Cooling and Conservation

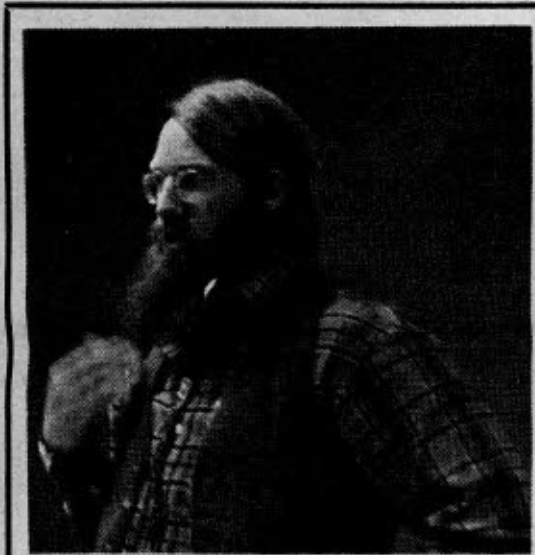
Solar Industry Emerges

by Joan Nice

Early in May a group of people convinced that they have a gift for mankind met together in Denver to discuss the details. The topic of solar heating and cooling, and energy conservation drew over 400 scientists, architects, developers, small businessmen, big businessmen, representative of utilities, government officials, students and private citizens.

The meeting itself was a mark of maturity for the industry. The conferees, fueled by the excitement that these devices create, were alert through about 40 hours of scheduled meetings during the three days. Environmental Action of Colorado, a group at the University of Denver, sponsored the meetings.

There were surprises — pleasant and unpleasant — for many people. Some were amazed by the number of people from all over the country who would pay the \$100 registration fee to talk about solar devices. Some were surprised by the number of businesses who've already committed themselves to the solar venture. Some were moved by the wide philosophical gaps they found between themselves and fellow



Malcolm Lillywhite (pictured above) is part of the team of scientists whose system will make the manure at the world's largest cattle feedlot into methane gas. The Gilcrest feedlot, one of two owned by Monfort of Colorado, will produce 4 million cubic feet of methane gas per day by processing manure in an anaerobic solar-heated digester.

The gas is generated by bacteria. What's left over is carbon dioxide and hydrogen sulfide, which are removed, and a good organic fertilizer.

Lillywhite's company, Solar Power Supply, served as consultants on the project. Bio-Gas of Colorado, Inc. will actually build the digester on a 40-acre site adjacent to Monfort's Gilcrest feedlot near Greeley, Colo. The facility will utilize the wastes of about 100,000 cattle. It should produce enough gas to operate Monfort's feedlots and its beef and lamb processing plants.

Solar Power Supply's interests lie in "natural energy systems." They are researching solar space heating and cooling, solar electrification, solar heated greenhouses, solar dryers, wind conversion and improved methods of waste treatment. For more information write to Lillywhite at Route 3, Box A10, Evergreen, Colo. 80439.

"solar nuts."

Vigorous activities in the field were reflected by lively, flexible sessions. In the midst of the "progress report" meetings, descriptions of two projects "just completed" were handed to the chairman and added to the program.

CONSERVATION AND SUN

The architects who spoke agreed that energy conservation and solar energy should go hand in hand.

Some "very effective solar buildings" have no solar collectors, said New York architect Richard G. Stein. He showed slides of the sun-oriented structures which were traditional in many cultures. Mesa Verde is "one of our earliest solar buildings," Stein said.

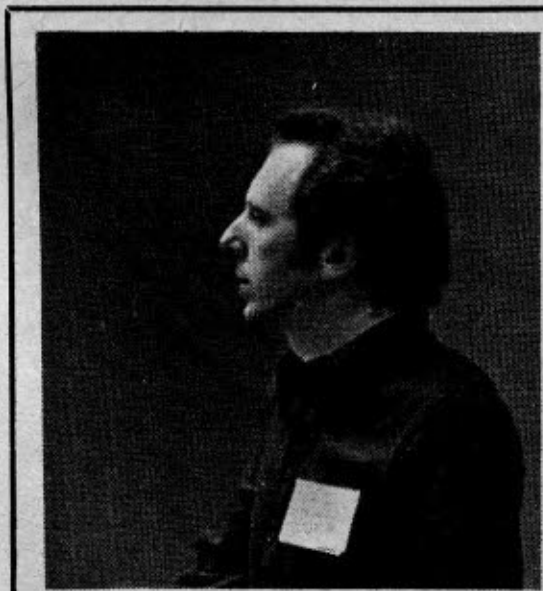
Stein is alarmed by the prevailing attitude in the U.S., which seems to be, "now that we've developed technology, we can ignore any consequences of what we do." This attitude "will be outdated," Stein predicts.

He tries to make buildings "compatible with the major source of energy in our lives." His firm is "old-fashioned enough to continue to use operable windows in all designs."

Architect Richard Crowther underlined the need for use of passive, rather than mechanical systems. "The earth itself is a passive system," said Crowther.

In his own home in Denver, Crowther has incorporated "energy conservation and passive solar design factors." That means no collectors, no storage bins — but use and storage of the sun through strategically placed walls, windows

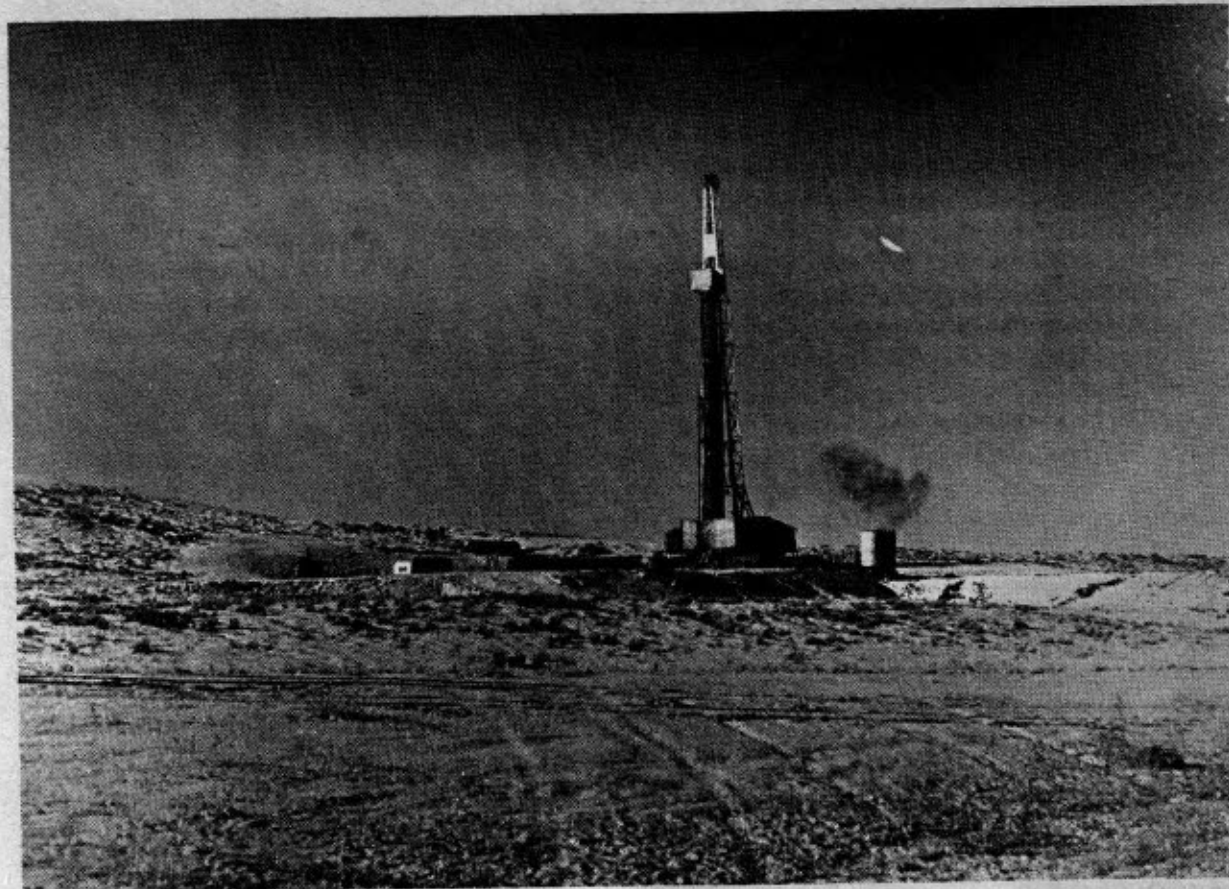
(Continued on page 12)



Solar, wind, and methane power will work together at the permanent teaching center to be built at the Wright-Ingraham Institute's Running Creek Field Station in Colorado. Environmental planner Rod Kuharick (pictured above) described the Institute's plans for "integrated energy systems" at the solar heating and cooling conference in Denver.

The station has already begun the 2-year project of measuring the incoming sun, wind, and waste at the site. Eventually students and volunteers will build the facility, an enclosed six to eight acres of space. The station is in a semiarid plains and canyon region between Denver and Colorado Springs.

The Institute is at 1228 Terrace Road, Colorado Springs, Colo. 80904.



In what may be one of the greatest ironies in the West, Gillette, Newcastle and Moorcroft, Wyoming, may have to restrict any new natural gas hookups. The oil and gas fields which supply them are to be flooded with water to increase oil flows. That process cuts gas production. Only a few years ago, billions of cubic feet of gas were flared off and burned in southern Campbell County. Production from the fabulous Hilight Field was burned because there were no pipelines to carry it away. Drilling continues as shown above, and in a few years the vast deposits of coal will be used to make pipeline gas.



Emphasis ENERGY



in the Northern Rockies and Great Plains

A proposed coal gasification plant in Wyoming's Powder River Basin may have to look elsewhere for water. Panhandle Eastern Pipeline Co. of Houston, Texas, had its application to buy water rights denied by the Wyoming Board of Control. The company wanted to buy water from a ranch company near Torrington. The water would have been diverted from the North Platte River upstream near Douglas. Panhandle says it is exploring underground water supplies, and it is also considering repair or reconstruction of a dam on a stream tributary to the North Platte. The company said it hoped to have the \$500 million plant in operation by 1979. It would employ 800-1,000 permanent workers.

The Colorado Air Pollution Control Commission has notified county commissioners in the oil shale region that air quality standards may be too high to allow for much oil shale development. The Commission wants the county commissioners to assess public opinion regarding potential development and present air quality standards.

Colony Development Corp. has been notified by the Colorado Department of Health that its application for a permit to build a shale oil plant has been held up. The Department says it needs additional data on air pollution problems. Those problems relate to ambient air standards and the possibility of cancer-causing substances in air emissions from the plant. Colorado state health director, Dr. Edward Dreyfuss, pointed out to Colony that the Department is concerned with the anticipated effect and impact upon air quality from a fully developed oil shale industry. Some projections have indicated ultimate production of 500,000 barrels per day, using plants similar to that proposed by Colony. Such production, it is esti-

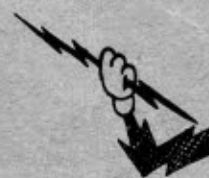
mated, would result in emissions 30 times as great as those from any existing Colorado power plant. The Colony plant would have a 50,000 barrel per day capacity.

An Idaho Public Utilities Commission staff report has recommended that Intermountain Gas Co. stop advertising for new customers, stop selling appliances, and be denied the inclusion of certain purchased gas costs as working capital. The gas company applied to the PUC for a 12% rate hike. Intermountain argues that such a recommended change in policy would be so radical that public hearings should be held. A spokesman for the company said natural gas is the most efficient use of energy, and the continued increased usage, through advertising, should be encouraged. (Ed. note: most authorities agree that natural gas supplies will not last more than another 11 years.)

A National Science Foundation report says some shale oil wastes contain cancer-causing substances. Such wastes, says the report, must be treated in such a way as to prevent their escape into the waters of the oil shale region.

Wyoming Rep. Teno Roncalio had the support of the entire Colorado delegation in the House but still saw his amendment on underground nuclear testing defeated. Roncalio's amendment would have cut off all funding for underground nuclear blasts to develop natural gas and oil shale. Roncalio and the five Colorado House members said the AEC should finish evaluating the Rio Blanco test before spending an additional \$4.3 million for planning additional tests.

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Friday, May 10, 1974



The Hot Line

across the country

The coal industry has, out of hand, called for the defeat of the House strip mining bill. It says the bill would seriously cut coal production during a time of national energy shortage. In the meantime, environmental groups think the bill has been so weakened by industry amendments that they are also considering action to defeat the bill. The bill still has to clear the Interior Committee and go to the Rules Committee before being considered by the full House.

Clean air standards which electric utilities say will jeopardize efforts to achieve national energy self-sufficiency were upheld by the U.S. Supreme Court. The Court refused to review a lower court decision which found Environmental Protection Agency rules were reasonable. The Edison Institute, composed of 193 utility companies supplying 77% of the nation's power, said EPA rules and regulations threatened the development of electrical power.

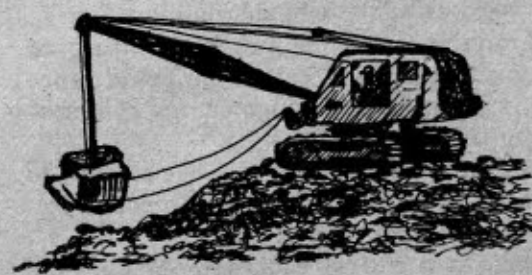
Dr. Philip Abelson, a physical chemist and respected spokesman for the scientific community, says the United States will face an even greater energy crisis in about two years. Abelson, editor of Science, the weekly publication of the American Assn. for the Advancement of Science, says the crisis will come because American's failure to conserve energy. Abelson also labeled President Nixon's pledge to achieve energy independence by 1980 as "political eyewash."

A high official of Atlantic Richfield Co., Dr. James Gibson, says Project Independence is "politically popular but a hopelessly unrealistic conception."

South Dakota Sen. Jim Abourezk has called for a General Accounting Office investigation of an Atomic Energy Commission report on solar energy. Abourezk and environmentalist Dr. Barry Commoner have accused the AEC of withholding a report favorable to the development of solar power. The AEC has denied the accusation but the report was not sent to Abourezk until he cited the Freedom of Information Act to the AEC.

Washington, D.C., is undertaking one of the most ambitious mass transit programs in the country. "Every day," says a D.C. Metro executive, "a million and a half dollars worth of public works is placed in the ground; and by 1990 the system will transport some 352 million riders a year." The first trains will run in mid-1975 on the system's first four and a half miles of track. By 1980 the regional network will include 98 miles of track. The Department of Housing and Urban Development estimates that "the area will receive a \$3 return for every dollar invested in building the rapid transit system."

A White House energy study team says the nation suffers from lack of an overall energy policy. It also found energy regulation is unresponsive to change, and coordination is poor between government agencies and between the federal government and the states. The team warned that the federal government may have to preempt decisions on energy facility siting unless federal, state and local governments can do a better job of coordinating.



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Solar Industry . . .

(Continued from page 10)



and doors, heavy insulation, double glassed windows and other techniques. Crowther has calculated that a dwelling designed for energy conservation will use 60% to 85% less energy and will cost 7% to 10% more than a conventional building.

Several speakers pointed out that mechanical solar energy systems could also help the country use less energy by decentralizing existing communities. Dr. Erich Farber, director of the solar energy conversion laboratory at the University of Florida, pointed out the waste that is tied to transportation of goods. A typical carrot might be grown in Mexico, flown to Los Angeles for packaging and flown to Florida for consumption. "That carrot, with very little energy in it, has consumed tremendous amounts of energy just to get there," Farber said.

SOLAR TECHNOLOGY

Most people at the conference hadn't come to solve technological problems. Either everybody already knew techniques or innovations were trade secrets, guarded to make a profit. Most technical discussions were aimed at entertaining and educating laymen.

"Black is not always the best absorber," Farber pointed out. Color is only a part of absorptive quality. "Nature may know something we don't," Farber said. "All the things she designed to absorb the sun are green, not black."

Farber showed slides of the solar devices he's toyed with at the University of Florida — a solar coffee heater (to provide refreshments at solar energy meetings), a swimming pool heater, solar stills, an ice machine, a solar cooker made of an umbrella covered with aluminum foil, electric cars powered on solar energy, freon engines and hot air engines.

In short Farber said "we can provide all forms of energy which you use in your daily life."

SELLING SUN

The problems which received the most attention at the conference were not technological details, but social and economic barriers to the industry. Conferees discussed existing building codes, public acceptance, material availability and the building industry.

Energex Corporation's first attempts to sell solar water heaters were "a brilliant failure," said corporation president K. A. Jenkins, "because no one wanted them."

"Public policy will be as important as technology," said Ronald Beckman, director of the Research and Design Institute in Providence, R. I. "We need enlightened public opinion."

Beckman is doing his part by building an energy conservation center in Providence which is powered by "benign energy systems" utilizing the sun and the wind.

Most specialists at the conference seemed to take a modest, cautious approach toward selling their product.

"I don't say it will solve all our problems — no

single source can," said Farber.

"Let's tell people what solar energy will do — and what it will not," said Dr. George Lof, director of the Solar Energy Applications Laboratory at Colorado State University.

"Recently I've seen many (solar) products on the market which are not very good. Codes may be necessary," Farber said.

P. Richard Rittleman, a Pennsylvania architect, said that solar heating and cooling systems will make economic sense only when we begin to assess all costs over the lifetime of products. If only the initial outlay of cash is considered, solar systems will never look cheaper than the available alternatives, he said.

Rittleman said that because of the artificial cycles we've adopted — including fiscal years and political terms — the "life cycle costing" of products probably won't be easily accepted.

The building industry looks like another obstacle to solar enthusiasts. Dr. Jerome Weingart called the industry an "innovation resistant sub-culture" which is conservative because, to do business, so many different people within the industry have to agree. To travel along the traditional avenues of the construction industry, solar technologists "will have to provide simple, low-risk systems," Weingart said.

GOVERNMENT SUPPORT

Naturally, conferees were interested in government grants.

"The National Science Foundation put the pants on solar energy," said Dr. George C. Szego, the president of InterTechnology Corporation in Warrenton, Va. Szego's firm received NSF money to put a solar heating system on a local high school.

The foundation "stuck its collective neck out — gave an aura of respectability to the backyard screwball," Szego said.

To fulfill its part of the bargain with the government, InterTech had to improvise. Since there was no trained labor force in their rural community, they "stripped the communes." A truck strike put them off schedule. The ideal building materials were not available. In spite of these problems, the builders were able to deliver a heating system to the school.

The first day after the collector was complete the thermometer in the classroom read 95 degrees. "We wanted to show them we could heat," Szego said.

Szego's project was one of four isolated cases where government funds for solar energy went to small businesses. The bulk of federal money is going to large corporations, however. In an article reprinted from the *Village Voice* which was circulated at the conference, James Ridgeway reports that "although solar energy is often advanced as a perfect example of small-scale technology that can lead to breaking the hold of the big oil companies and utilities, it doesn't seem to be working out that way . . . oil companies and aerospace firms are major research recipients."

Among the firms to be included on current government research teams are Honeywell, the Los Alamos Laboratory of the Atomic Energy Commission, General Electric, Westinghouse and TRW.

"It looks like the defense industry all over again," Ridgeway says.

One of the conference speakers, Harold Hay, president of SkyTherm Processes and Engineering in Los Angeles, was also critical of the federal funding program. "Ninety per cent of the federal money" is wasted, Hay says, because while they're passing it out "they won't even look at what exists today."

Hay believes simple solar systems and solar architecture are best. "Nature is the highest

technology," he said. Hay's home in Arizona was built on the principle of movable insulation. When the insulation is rolled back his home is heated by letting the sun in during the day or cooled by radiating heat out of the roof at night.

The man with the money, Dr. Lloyd Herwig, a research program manager for the National Science Foundation, defined the goals of the government's program for the conferees.

"We will succeed when solar power enters the commercial market — reliable, low-cost and built in," he said. To achieve this goal, NSF has designed a three-phase program which begins at "Phase O — proof of concept experiments."

This carefully paced advancement in the hands of big corporations and their university partners will require more money and time than some solar advocates think is necessary.

"We're ready for the early stages (of applied solar technology) by the end of this month — not the end of this decade," says Harold Hay.

THE USER

"I'm a user," said R. Robert Dempsey, head of station resources and planning at the Naval Ammunition Depot in Hawthorne, Nevada. With 625 civilian and military homes to heat "we started receiving four or five messages weekly about saving energy," Dempsey said. Then, in December his gas supplier warned of a shutdown.

When he finally tried to find someone who could solar heat two of the Navy's homes within three weeks, "you've never seen so many excuses," Dempsey said.

Finally, Materials Consultants Inc., a small Denver firm, accepted the job. They completed a \$15,000 solar system for the two houses by the end of January.

"How many of you here have spent more money than that just to write a proposal?" Dempsey asked the audience. "We're on technological welfare. We don't seem to know what we're going to do until we find out how big our welfare check from the government is."

THE SOLAR SCHISM

At least two kinds of people at the conference expressed strong philosophical feelings about solar development. Some want to use small, simple systems to decentralize individuals and communities — to make them independent of the national utility network. Others want to build devices that will slip neatly into the existing networks.

"We have to interface with utility companies either in competition or co-operation," said E. S. Davis, an engineer at Caltech. Davis has chosen to infiltrate the system through a co-operative effort with the Southern California Gas Company. Davis is manager of Project SAGE, a plan to use solar collectors to supplement gas water heating for new apartments in Southern California.

INTERNATIONAL ENERGY

The longest look into the future was taken by the conference banquet speaker, Dr. Thomas Stonier, director of the Peace Studies Program at Manhattan College in New York. If solar energy development became a higher goal than nationalism, we might achieve two things, Stonier said. As developing nations industrialize, we'd have a cleaner globe and we might also have world peace, Stonier said.

"A solar energy development decade could become a significant construct in the development of a global community," Stonier said.

think SOLAR ENERGY

Western Roundup

Howls Used to Find Wolves

Wolf howls on tape are being used to search for the Northern Rocky Mountain wolf, once thought to be extinct. U.S. Fish and Wildlife Service biologists hope the recorded howls will lure into view a remnant or returned population of about 20.

At least two positive identifications of the Northern Rocky Mountain wolf have been made in Montana recently, the U.S. Fish and Wildlife Service says. The wolves, *Canis lupus irremotus*, are suspected to be in the backcountry of Yellowstone National Park and the Shoshone Forest in Wyoming as well. The tapes used in the experiment contain the sounds of the eastern timber wolf, a close relative.

"Like a community sing, a howl is a happy social occasion," says a 1958 study cited by the U.S. Fish and Wildlife Service. "Wolves love a howl. When it is started, they instantly seek contact with one another, troop together fur to fur. Some wolves will run from any distance, panting and bright eyed to join in, uttering as they near, fervent, little wows, jaws wide, hardly able to wait to sing."

The Northern Rocky Mountain wolf formerly ranged over parts of Montana, the Black Hills of South Dakota, all of Idaho, and parts of Oregon, Washington, and two provinces of Canada. Poisoning, trapping, hunting and land development caused the wolf's decline.

Arizonans Debate Canyon Dam

Sen. Barry Goldwater doubts that the Arizona Power Authority will be allowed to build their proposed Hualapai Dam in Grand Canyon. "I don't think you are ever going to see this country build another big dam," said the Arizona senator. The Hualapai was killed once before by Congress in 1968.

Matt Ringer, president of the Arizona branch of Friends of the Earth, held a special press conference in Phoenix to voice his objections to the revived dam proposal. He said the aesthetic consequences of the dam would be overpowering and the benefits small — 3.6% of Arizona's electrical power needs.

"The dam would wipe out a major portion of Arizona's last wild section of river. The Gila has been channelized. The Verde and Little Colorado are threatened respectively by the Central Arizona Project and flood control measures. And the Salt is reduced to such a level that it is called a flood if the river runs down its main channel. The mighty Colorado which once roared to the Gulf of Mexico now whimpers its salt-ridden way into Mexico and nearly dies before it reaches the sea. The Hualapai dam would silence another 90 miles of white water and cover 90 miles of marvelous canyon walls with green water. Why? So Arizona will have 3.6% more electricity in 1978," Ringer said.

Ringer also cited the Arizona Academy of Science position against the construction of the dam. "According to them the area 'contains the sole remaining semblance of a natural ecosystem in the entire lower Colorado River and is of great scientific and wilderness value.'"

Arizona Rep. Sam Steiger is a major proponent of the dam. He claims the dam would provide 30% of the electrical power for Arizona — not the 3.6% calculated by Friends of the Earth.

Health May Curtail Vail

The executive director of the Colorado Department of Health has advised the Eagle County Commissioners that his agency may not be able to issue the waste discharge permits to authorize various planned developments in the county. The state health director's comments were in reply to a request that the commissioners be informed of initial reaction to the proposed 3,000-unit Arrowhead development west of Vail, Colo.

"We are informed that Arrowhead is but one of a number of developments proposed or in the Upper Eagle River Valley which, if completed as planned, would produce in the neighborhoods of Avon, Edwards, Wolcott and Eagle a new population of at least 40,000 persons over and above the present population," the health director said. According to rough estimates, the flow of the Eagle River may not have the capability to assimilate the wastes of that large number of persons, even though the effluents meet state waste discharge standards, the health director says.

County Faces Zoning Suits

The county commissioners in Pitkin County, Colo. face \$32 million worth of law suits as a result of the zoning amendments they passed in March. The nine landowners suing claim that lowering the allowable densities on their properties is an unconstitutional taking of property without compensation. "I think they're going to lose their lawsuits," said Commissioner Dwight Shellman, an Aspen lawyer who was elected by a wide margin on a controlled growth platform in the last election. "We feel the county has a legitimate position and we're going to try to vindicate that position."



Under the Taylor Grazing Act buffalo are not classified as domestic livestock. For that reason, a herd donated to the state of Wyoming by the late rancher Herman Werner is having difficulty earning the right to nibble on federal lands. The rancher who maintains the herd of 26 yearlings on his property near Ten Sleep has been denied a permanent federal grazing permit. While he appeals that ruling through Bureau of Land Management administrative channels, he will be allowed to graze the bison on federal land for one year. Wyoming Secretary of State Thyra Thomson says that if the federal government can "let the coyotes roam," it should allow the same privilege to buffalo.

Photo by Ken Norgand

Colorado Lacks Land Policy

The Colorado legislature passed land use legislation last month. But environmentalists in the state are quick to qualify the news.

"To hail HB 1041 as an answer of any type to our pressing land use problems is being less than candid with the people of Colorado," said the representatives of three environmental groups in a letter to Gov. John Vanderhoof. The three — Jim Monaghan of the Colorado Open Space Council, John Barnes of the Sierra Club and Margot Zallen of PLAN Jeffco — asked Vanderhoof to veto the bill.

Their letter says that the final version of the bill "contains laborious procedure" but "it has absolutely no policy or criteria concerning the actual designation of matters of state interest." This lack of policy will lead to difficulties if the Land Use Commission tries to take a locality to court, the environmentalists said.

Because no state policies have been defined, "the courts will have no choice but to throw the matter out," they told Vanderhoof.

Briefly noted . . .

The Utah Association of Counties has endorsed the newly enacted state land use planning bill. The UAC also charged in a resolution that the act has been "grossly misrepresented" by opponents. Earlier, Gov. Calvin L. Rampton had defended the bill against a petition drive to defeat land use planning.

* * *

The environment lost 113-66 in the 1974 Montana legislature, according to a *Billings Gazette* reporter. The numbers reflect the ratio of bills and resolutions killed to those passed dealing with land, water and other natural resources, and pollution control.

* * *

Private land regulations in the Sawtooth National Recreation Area will eliminate two small Idaho communities — Obsidian and Petit Lake. Landowners have three options. They may sell their land to the Forest Service for a "fair market price" and move elsewhere. They may sell the land and continue to live on it until the end of 1988. Or they may trade their land for public forest lands in a less conspicuous place.

* * *

The effect of coyote predation on game animals and game birds is the aim of a six-year study approved by the Montana Fish and Game Commission. The study is estimated to cost about \$213,000. The Montana Department says the coyote is controversial because of its alleged effect on both livestock and game. It says accurate information on coyote populations and predatory effects are unknown.

14-High Country News
Friday, May 10, 1974

Thoughts from the Distaff Corner

by Marge Higley

Sometimes I wonder if a little bit of judicious housewifely wisdom might not help to solve some of those seemingly insolvable problems.

I've been reading about all the difficulties to be encountered in the extraction of oil from shale. The biggest obstacle, of course, is the disposal of the spent shale, after the oil has been removed. Environmental and other considerations prohibit just piling it all up into barren mountains. And it hardly makes sense to do something like grind it up, add oil, and utilize it in the paving of the nation's millions of miles of highways! But they do have to put it somewhere, if they're going to use the oil from it.

Colony Development Operation, of Colorado, has spent seven years and millions of dollars trying to figure that one out. They're considering the feasibility of using it to fill up deep natural canyons. They would then level it off and plant stuff on it, so it would somewhat resemble natural surroundings. But, unfortunately, it isn't soil. It contains no organic matter, and the minerals in it are the kind that tend to inhibit, not enhance, plant growth. So, in order to support plant life the salts must be leached out, fertilizer and mulch continually added, and then it must always be irrigated. And plants must be found which will grow and reproduce at that altitude and in that short growing season. It's a very costly procedure, and so far they have had but fragmentary success in small scale trials.

Small scale. That's the rub! There can be nothing small about it. We're talking about leftover spent shale at the rate of something like 55 thousand tons a day! And a frustrating fact is that it increases in bulk when the oil is extracted. So even if it could somehow be put back in the hole it came from, there would still be some left over. Like when you cook rice.

Which reminds me of Helen the Housewife. Years ago, when she was an inexperienced young bride, she decided one day to surprise her husband by serving rice instead of potatoes for dinner. That was before the day of packaged convenience foods with explicit directions on every box. Rice was sold in bulk, so Helen bought five pounds of it, took it home, and dumped it into a pan of boiling water. Pretty soon she had to move it into a larger saucepan, and then into a galvanized bucket, which was the largest container she owned. Finally, she ran to the hardware store and bought a huge kettle, in which she completed the cooking process.

They ate plain rice for a couple of days, then Helen bought raisins to add to some of the rice, just for a change. She bought sugar and eggs and milk and made some of it into rice pudding. Then she bought cheese and tomatoes and onions and meat, and they ate Spanish rice for awhile. Eventually her young husband objected that he never had been fond of rice — he really preferred potatoes. So she threw out what was left, ruefully thinking of all the money and time and effort she had wasted trying to furnish just one small portion of one single meal.

In the years since that episode, Helen has successfully raised a large family and has become very practical about such things as wasted time, money, effort and other resources.

All of this has absolutely nothing to do with oil shale, of course. Oil shale — which might someday supply less than two percent of the nation's oil needs, provided they can solve all those problems.

I showed the article to Helen the other day, and asked her what she thought about it. Her answer was cryptic.

"Well," she said, emphatically, "I think we'd be smarter to stick with potatoes until we're absolutely sure that we really need the rice!"



This dead tree along the Three Senses Nature Trail in Yellowstone National Park has a bluebird nest in plain view of those fortunate enough to see. For those not so fortunate, the cheery notes of the adult birds would tell the listener of the comings and goings of the busy parents.

Colorado's White Cane Hikers

by Ruth S. McKown

One of the most dedicated groups in the Colorado Mountain Club is called the White Cane Hikers, which sponsors hikes for the blind. These hikes were organized in November, 1969, by Wilbert and Arline Moehrke, who, with some misgivings, took four blind people on a three-mile hike around Sloan's Lake near Denver. This hike was on level ground and mostly on a concrete path.

From that small beginning the CMC and the Moehrkes have found that blind people can go almost anywhere, providing they have a sighted person with them. Blind hikers have climbed the steps to Devils' Head Fire Lookout, gone up the slopes of Mount Evans, and tramped through snow on snowshoes.

"The greatest reward we have is seeing the difference it makes in the blind person's outlook on life," Mrs. Moehrke says.

"It opens up a new world to them. So many of them have been either so over-protected or so much ignored that they have never had the opportunity to experience things we take for granted. On these hikes, they feel the texture of the rocks and cones and shrubs. They smell the flowers and feel the wind, and hear the gurgling of streams. They are really different people when they come home."

White Cane hikes are scheduled monthly throughout the year, and are publicized through the CMC's sport schedule, which lists all the club's activities for the entire state. Each blind hiker has at least one sighted guide to accompany him, and a volunteer calls at his home to pick him up and take him to the park-

ing lot meeting place. Passengers share the cost of the ride. Sighted guides are changed during the hike so that the guest will become better acquainted.

The success of this program has been due largely to the dedication of the volunteers who have been willing to offer consistent help.



Waste Makes Jobs

People on welfare may be trained to take thousands of jobs created by a new environmental awareness, the Environmental Protection Agency and the Department of Labor have announced.

About 25,000 workers will be needed to operate new water and wastewater treatment facilities built in the next five years. Only half of these workers are trained and available today.

In a \$1 million pilot project, the agencies will offer 784 people on welfare training and jobs in water purification and distribution, sewage treatment, garbage disposal, air pollution control and pest extermination.

The experimental training program will begin in five places: Baltimore, Md.; Baton Rouge, La.; Dallas, Tex.; Denver, Colo.; and in the state of South Carolina. The trainees will be employable recipients of Aid to Families With Dependent Children enrolled in the Work Incentive program.

Book Review

From the Land and Back

by Curtis K. Stadtfeld (foreword by Rene Dubos), Charles Scribner's Sons, New York, 1972, 202 pages, \$2.95, paperback.

Review by Verne Huser

Reading Curtis Stadtfeld's book *From the Land and Back*, I went back to my boyhood in Wisconsin where I really grew up, growing five inches and gaining 50 pounds in six months. I had only half-a-year on a farm, but it has marked my life, enriching it in numerable ways. The author of this book spent 18 years on a farm. We both became English teachers, and perhaps that is another of the reasons I identify with him.

But basically I saw the world much as he seems to have seen it as a boy. I lived many of the experiences about which he writes, and I've experienced many of the philosophical meanderings that he relates. The book spoke to me, both my past and my present; it moved me.

In his introduction the author explains his title. He now lives in a city. How has he gone back to the land? "I go back not in a physical sense," he says, "but in a recognition . . . of how important this life was to me and to many of us. None of us can go back in time or space, but if we are lucky, we can use the things we learned to help us understand what we have become and why."

Stadtfeld is a farmboy at heart, but he has left the farm and become a university professor. From his ivory tower he can see more than he could from his Michigan farm, but his life is stamped with a closeness to the earth and a land ethic that few people not raised on a farm can fully appreciate.

"For every step that man makes in rising above nature is at the expense of something else," he says. "We are learning that we must strike a bargain with the environment: so much comfort for so much imbalance."

He talks of the land as his forefathers found it, "ravaged by the nineteenth century greedy lumber barons" so that it looked like "a kind of early-stage low-grade Nagasaki, a quality of destruction not yet much advanced by technology." In those days he says, "We had only begun to learn about the pillage of nature, and the battle was still on fairly even ground."

The book is not all ecology and environmental destruction. The so-called doomsday syndrome does not pervade it. But the reader can see the pattern of things, and the author provides momentary insights: "Nature had anticipated man, or at least destruction, and had built restoration schemes into her system. Jackpines popped up when the shade of the mighty whites (pines) was gone, and the scrub trees and the Kirtland's warbler began the job of reforestation, while native fern and quack grass held the land in place. Although man had destroyed a product, he had not destroyed the producer and nature moved to reclaim the land and start over."

The book is about life on a poor farm in central Michigan in the '30s and '40s, about the neighbors and the livestock, about the woods and the small town nearby and about the school — the way it was before the war. And the book is about the changes the war brought, the advance of technology, the mechanization of life. He speaks of "agriculture in combat with the environment" and "the danger . . . that we might conquer so completely that the environment will cease to fight back."

One interesting bit of philosophy: "We bought hay choppers in the first place for the same reasons we go to the moon; we found out we could, and so we thought we must." And further, "We are captives of our technology. We need more fertilizer to grow the big crops that the machines need to make themselves profitable."

But he is hopeful too: "We may some day learn how to strike a balance between useful progress and the thoughtless gouging away of the land. We are becoming more cautious in these judgements."

I certainly hope so. I too have hope, perhaps responding to Stadtfeld's observation that "The land is neutral to you; you can leave it and it will revert to its natural ways . . ."

I also respond to his woods: "The woods provided shelter for deer that we did not hunt, and a place to be alone in a spot that man visited but did not dominate. They gave us a goal for walking. When there was a confidence to be shared, a companionship to be nourished, a special time to spend with someone, it was always a good idea to take a walk to the woods."

May I suggest a verbal walk *From the Land and Back*?



Eavesdropper

LOONEY LIMERICKS

by Zane E. Cology

Eenie, meenie, minie, mo
Where shall Western water go?
For Industry? Wheat?
Coal power? Meat?
Just flip the coin — that's how we'll know!

Anchovies, the small fish which serve as food for both man and animals, have returned to the coast of Peru. Millions of the fish are caught and ground up for a high-protein food, when they are available. Two years ago, the anchovies disappeared, suddenly throwing world food supplies into a shortage. Soybeans helped take the place of the anchovies and the price of the beans tripled. The return of the anchovies will now help alleviate world food shortages, and it will also mean lower prices for American soybeans.

Personalized license plate sales in California have raised more than \$3 million for environmental projects since 1970. So far 110,000 personalized plates have been sold for \$25 each, and that money is earmarked for environmental research and protection. To determine how the money was to be spent, a survey was conducted of personalized license plate holders. A majority wanted the revenue used for research in air, noise and water pollution and for wildlife habitat acquisition and maintenance.

With the Arab oil embargo lifted, Americans are going back to one of their favorite bad habits — the full-size car. Both General Motors and Ford reported an upswing in big car sales for the first 20 days of April.

The Arabian oryx, a handsome creamy-white antelope with long rapier horns, may now be extinct in the wild. The May issue of *National Parks and Conservation Magazine* says the last three oryx were run down and killed by a poacher in a landrover. All hope for saving the species from total extinction now rests with Operation Oryx, a captive breeding program centered at the Phoenix Zoo in Arizona.

The contamination of 12 million chickens by a cancer-causing pesticide in March was not an isolated incident, but part of a national pattern, according to federal records. The records describe 14 major incidents since 1969 in which the pesticide Dieldrin was found in excessive amounts in turkeys, swine, cattle and chickens. "We're finding examples of this contamination all over the country," said one federal official.

U.S. District Court Judge Myles W. Lord has ordered the Reserve Mining Company to stop dumping toxic taconite tailings into Lake Superior. The tailings are the source of asbestos, a cancer-causing substance that was found in the water supplies of several lake shore communities. Lord said he was sympathetic with the local communities that will undergo economic hardship because of the shutdown, but the public's health comes first. The shutdown is held up pending appeal by Reserve.

The world's first bald eagle "egg plant" will take place this month. Eagle eggs will be taken from a nest in Minnesota that has traditionally been productive, to a nest in Maine that has been unproductive because of high pesticide levels in the area. The main objective is to establish a young bald eagle population in Maine while pollutant levels are declining and before the existing adults die out from natural causes. Only 7 eaglets were produced from 19 Maine nests in 1973.

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Bart Koehler, Environmental Advocate

Bart Koehler helped build condominiums in Florida after graduating from the University of Wyoming in outdoor recreation and resource management. It was a far cry from his interest — and the Rockies, but it did bring in a little money. His construction days ended abruptly when The Wilderness Society's western regional office gave him a call. The Society wanted to know if he'd give up Florida to hike around the Rockies studying potential wilderness, take pictures and write field reports. Later that week, he was in Washington, D.C., undergoing orientation before returning West.

Koehler's thesis topic dovetailed with his new duties. While at the University of Wyoming he had studied roadless areas in the Medicine Bow National Forest. He carried out an evaluation of the wilderness potential of 16 areas in the forest. In the end he came up with eight areas worthy of study. The Forest Service only came up with three.

At the Society's regional office in Denver, Koehler continued his studies of wilderness potential. Whenever there was a problem or a hearing he was sent into the field. He studied maps, organized citizens and testified for the Society.

By January of 1974 another group had need of Koehler's help. The Wyoming Outdoor Council knew of his interest in Wyoming's wild lands and asked him to spearhead their lobbying effort in Cheyenne for a month. They also talked about keeping him on as executive director.

The lobbying effort was intended to be mostly for observation and exposure. It was billed as a budget session and no one expected much more than that. Koehler accepted.

"The original idea was to go down, meet people and get my feet wet. But as it was, I was out there swimming," says Koehler. "The Council debated whether they even needed a lobbyist down in Cheyenne for a budget session. As it was, the session blew open and everyone was taken by surprise. In the course of two weeks the Legislature deliberated on a utility siting act, a subdivision act, a coal excise tax, a slurry pipeline act, a financial disclosure act, a joint powers act and the budget.

"I didn't know the fine art of lobbying but I did know how not to lobby. You can't push yourself on the legislators," admits Koehler. "I hate to call myself a lobbyist, I'm not doing it for profit or private motive — it's for the public interest. I think of myself as an environmental advocate," he says. "We were low key. We weren't pushy. The legislators thought that, for environmentalists, we were awfully moderate. We came off as sensible people."

One of the most crucial bills under consideration was the utility siting act according to Koehler. "We almost got that one through. The bill would have provided foreknowledge to the state and the communities before a major impact occurs. It was more of a social and economic planning bill than an environmental bill," he says.

"The bill was never supposed to even get into committee and no one expected it would ever get out, but surprisingly enough it made it. We worked very closely with the sponsor, we attended all the committee meetings, and we worked closely with the legislators' constituents asking them to voice their concern," says Koehler.

"Mobilizing constituents is our only power, and it's the ultimate power in the long run. Representatives are only as good as the public that's behind them. If they aren't responsive to their constituents' needs, they may not stay in office next time around.

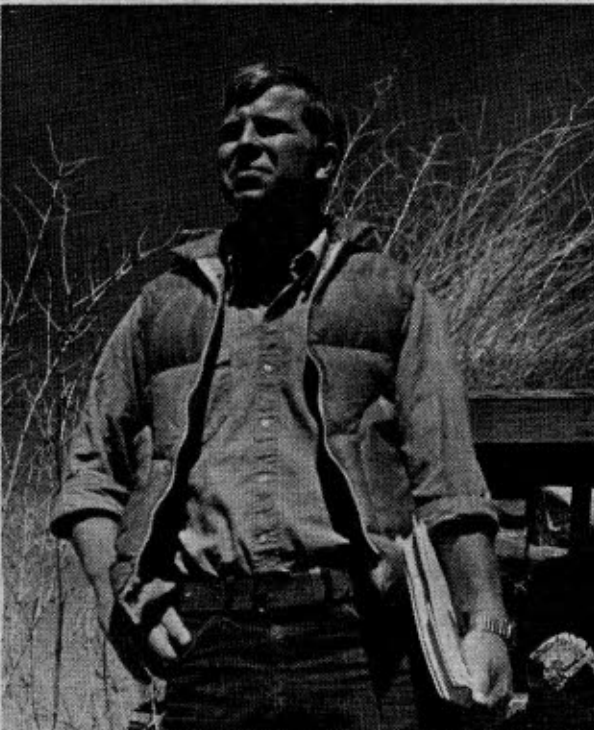
"We try to help people realize that they do

have power. Too often people give up and say that there's nothing they can do. That's wrong. They can change things. It's slow, but it works," says Koehler.

"You should have seen the change that came over legislators as they got phone calls and letters overflowing on their desks about the utility siting act. Many turned about and said, 'I'll be damned if I'm going to let this bill die in committee.'

"It came out of committee and passed the House. Again no one thought it had a chance, but it passed. It was only when the vote came to shut down the Legislature that the measure lost its momentum. Now it's under study in an interim committee. I think it will emerge next session as a stronger bill," he says.

When the session was over, the Wyoming Outdoor Council met in Kemmerer to decide if



they should offer Koehler their executive directorship. On the same day the Wilderness Society met in Washington to decide if they could hire him as a Wyoming consultant. Both groups were impressed with Koehler's performance, so he was hired by both. The Society wanted him full-time in the Denver office, but he felt it was a critical time to be in Wyoming, so he proposed this compromise and luckily both parties accepted it. Even though the jobs overlap in many areas, Koehler has more than a full-time job on his hands.

"With the Society, I'll be running some citizen awareness workshops, getting grass roots involvement in the decision making process . . . I'll be using wilderness as a tool to work this out. I hope to run one this summer and several this coming fall," says Koehler.

As for more wilderness in Wyoming, Koehler thinks "we're in good shape" but he'd like to see the addition of a few key additional areas — areas to be added to the Cloud Peaks area, an enlargement of the Gros Ventre, and several areas in the Medicine Bow National Forest — notably Houston Park.

He'll also be looking at BLM (Bureau of Land Management) primitive areas for wilderness potential. "The wilderness process goes on and on," he says.

With the Council, Koehler thinks he'll have to go on tour to reach more people. "I hope to put on a program in each little town and city and let the state know what we think is happening to our environment. I don't have enough time right now, though. I am the entire full-time staff. I have a few volunteers helping me, but I need much more support.

One of Koehler's volunteers is the Council's secretary, Colleen Kelly. She usually volunteers half her day to the Council. Kelly is putting together a grant proposal so the Council can hold land use planning workshops around the state.

"They aren't designed to provide answers, for no two towns are alike, but they will bring the problems out in the open and work towards meeting those problems," says Koehler.

"Planning is a dirty word in this state, but I think it's the lesser of two evils. If you don't start planning your own future then the change will direct your destiny — and in disastrous ways. Let's face it, Wyoming is a precious jewel in some form or another to the rest of the country. They all want a piece of it. People across the country are planning Wyoming's future and many don't even know where it is — but still there's talk of making a big black hole in the northeast corner of the state," he says.

"Land use planning is essential. Even Governor Hathaway is saying the word 'planning.' He even mentioned 'zoning' once, and 'zoning' just makes Wyomingites jump up and down screaming 'no way!'

"Let's not use the word 'zoning' if it bothers people. Let's use the word 'identify' as Ken Diem of the State Land Use Study Commission suggests. For land use planning is really only an identification of areas of critical concern. People like the Wind River Range, they like the river valleys — then let's identify them as being of critical concern and not mess them up," says Koehler.

Another project is the legislative analysis. The Council just finished this evaluation of the voting records of state legislators on environmental and public interest issues. The analysis was sent to the legislators, the media and Council members.

Koehler has mapped out an ambitious program for himself, the Society and the Council, and he emphasizes that it can't be accomplished single-handedly. "The state is so spread out that you need someone that works full-time that the people can look to. The executive director isn't a figurehead, he's a contact between the far flung members. When the Council operated without a director it slipped into a state of dormancy. I think the position is essential. But we need more members too — working members. Ideally we'd like members or member groups in every community. We're working to identify and sign up volunteers around the state in an attempt to broaden our membership base.

Koehler runs both jobs out of the Outdoor Council office, 112 Ivinson, in Laramie. Memberships in the Council are \$10 a year but supporting memberships of \$10 per month are solicited.

—BH

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