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High Country News

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Colorado companies offer solar heaters now

Salesmen with sun power woo West

Prepare to meet scarcities of 21st century

by Joan Nice

You could be heating your home today by capturing the sunshine that falls on your roof or yard.

You've probably known that for some time. But until recently there was no one in the marketplace proclaiming it, clamoring for your attention and your dollars.

Colorado alone now boasts of about 100 solar installations and about half a dozen ...panies which offer solar systems. Local ...r boosters call Denver "the solar ...gy capital of the world."

Many people welcome a growing solar energy industry. But some of them point out soberly that today it is a boom-industry, without standards or regulation, containing all of the perils associated with rapid growth — fast-buck men, scant history, and consumer confusion. Solar power theory has been around a long time. But its commercialization introduces variously priced packages which come in an assortment of sizes and styles which can baffle the average consumer.

This confusion hasn't stopped builders and homeowners interested in solar energy, of course. People like builder Bob White have leaped into the field, relying on their own good sense to guide them. White has designed a solar system for a cluster of eight condominiums in downtown Boulder, Colo.

A year ago White says he knew nothing about solar energy — just that he couldn't get a natural gas hookup. Now he's convinced that "it's the only way to build."

He is discouraged that other builders continue to ignore energy-saving designs. Their buildings may last 100 to 200 years and White fears they won't be appropriate for the 21st century.

But on the other hand, he is "laughing all the way to the bank." The eight con-...inum units, which sold for slightly ... $40,000 each, sold out almost as soon ...ey hit the market, he says.

Apparently, consumers are aware that buildings which will be appropriate for the 21st century will reflect the scarceness of fuel resources by employing solar collectors and other fuel-saving ideas.

Conservation measures should come first, most experts say. Preparing a house to rely on the sun may involve an investment in weatherstripping, a caulking gun, draperies, insulation, plastic window covering or storm windows. Only when another dollar invested in such leak-plugging won't save a dollar's worth of fuel, is it time to consider the most expensive step — buying a solar heater.

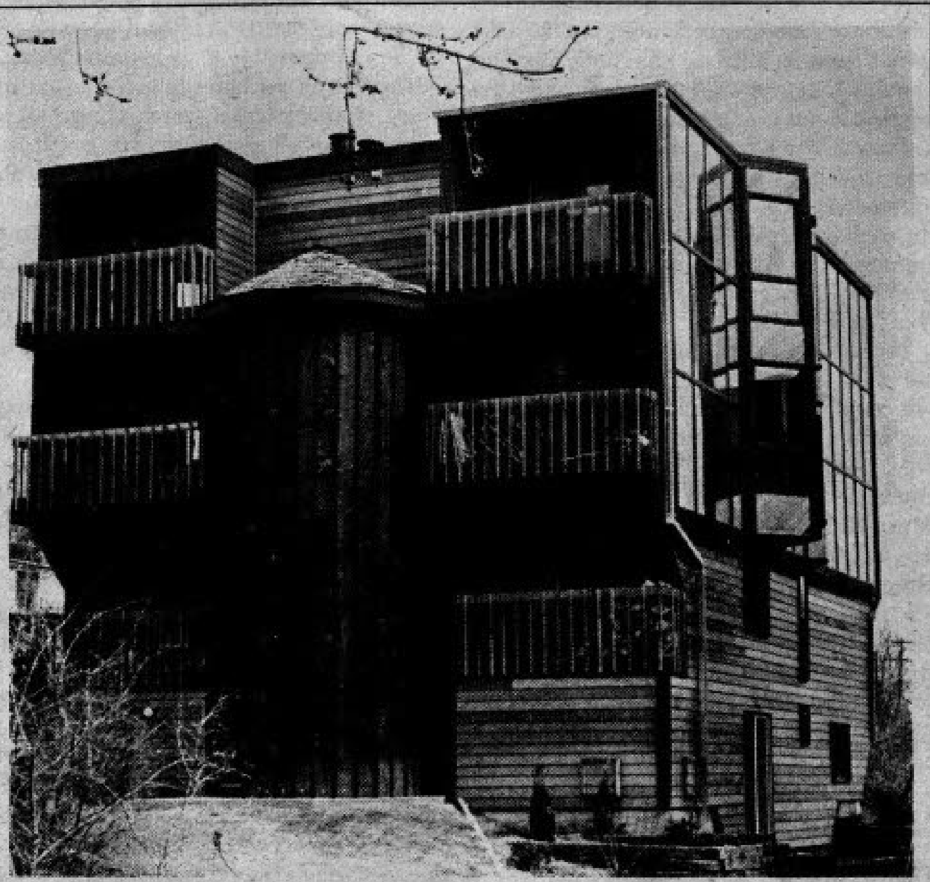
In this issue we present sketches of five Colorado-based companies which offer sun-powered heating systems. Two of the companies collect their heat in air and store it in rocks. The other three collect and store the heat in water.

This is where the field becomes somewhat perilous for the consumer. The costs of the five systems, complete with collectors, storage units, controls, and installation, range from about $12 to more than $35 per square foot of collector space. The amount of sunlight that can be collected from any one square foot of the earth at a given moment is constant. So each unit starts out with the same potential for heat collection. The efficiencies of collectors vary, of course, depending upon the design and construction. Only the Solaron and Solaris units have enough operating history to make predictions about long-term efficiencies and product durability possible. Thus, it is hard to tell whether or not you are getting more usable heat from the sun for a higher price per square foot of collector.

"There is no magic to solar energy," says John Keyes, explaining the inner workings of his backyard solar furnace. Keyes is president of the International Solarthermics Corp. of Nederland, Colo.

The people involved in the sale of sun power seem as varied as their products. Among the characters in **HCN's** sampling of the industry are a philosopher-businessman, a tinkering physicist, an idealistic engineer, and a solar power professor.

We hope that the following discussions of these men, their products, and their companies reflects the excitement, the competition, and the confusion that sun power, when reduced to a salable product, has created in its early years in the American marketplace.



A building appropriate for the 21st century, according to builder Bob White of Boulder, Colo. The four-family condominium has energy conservation and a vertical solar system (at right) built in. But White says the greatest energy savings can be attributed to its location in downtown Boulder. Most residents don't have to drive to work or shop.

International Solarthermics

Sun furnaces fit in backyard

John Keyes, chairman of the board and founder of the International Solarthermics Corp., claims that he has been persecuted for solving the practical problems of solar energy. Using "farmer logic" he says he and engineers in his firm have developed a small, moderately priced solar heating system that can be "plugged in" to existing homes. But solar intellectuals aren't interested in practicality, Keyes says.

Keyes' critics claim that his firm has made misleading claims. They point out that he advocates more than twice as much insulation as the Federal Housing Administration suggests for homes. It may not be possible to make existing homes as airtight as he recommends, critics say. And as a result, consumers may not save as much on their fuel bill with Keyes' small-sized collectors as they had hoped.

Others in the industry are critical of

(Continued on page 4)

HIGH COUNTRY

By Tom Bell

A pair of geese was flying along the river this morning. I stopped to listen and watch in the dim light of dawn. Their honking and wild flight proclaimed a hint of spring. This in spite of the vagaries of weather which brought a light dusting of snow to the valley floor.

The anticipation of spring is a pleasant thing. It is especially so for those who live close to the land. There is a promise in the air itself as it starts to warm. Subtle green tints the slopes, and swelling buds on tree and bush give the first faint glimmerings of stirring life within.

As spring slowly unfolds, the timeless cycle of creation and re-creation begins again. It is a most marvelous process to watch. The deep mysteries of life itself are beyond our human knowledge. We wonder as much at the powerful forces at work inside a tiny seed as we do of those that propel the constellations through an unfathomed cosmos.

But if we wonder, we also learn. And in learning we can become either humble or arrogant. Those who take up a simple, uncomplicated life close to the mother earth tend to grasp the awe inspiring significance of the natural laws which govern us all. They are immutable laws; they foster a simple wisdom and a deep humility.

The technological age in which we now live promotes a self-deceiving climate of arrogance. We have seemingly defied the laws of nature and bent them to our own selfish ends. One great man-made triumph after another leads us to believe there is nothing impossible for the human intellect.

Another trouble with our technological arrogance is that we are being tricked into believing that each of us can share in an even larger share of the pie. We assume that each technological triumph is pure, unalloyed benefit for ME. Nevermind that wastes from our nuclear power plants are being passed on to unborn generations as a fiendish burden. No matter that poisonous materials insidiously appear in our water, our air, and our food.

And then we let our human pretensions and sentiments override our good common sense. In this country every man has an implied right to be as superficially rich and important as the next guy. (We need to keep up with the Joneses, you know!) Thus, we may live in a dump and drive a Cadillac up and down Main Street.

The trappings of our affluent society are as necessary for our ego as showing the flag. It is downright un-American to deny ourselves that sporty car, or snowmobile, or color television (or any number of unnecessary gadgets and throwaways) and thereby deny some other red-blooded American the beer in his frost-free refrigerator.

The trouble with each of us is that we have let our hopes, aspirations, and expectations blind us to reality. We live in a world of finite limits. We know we are in trouble when we reach into our pocket and find the last nickel we own. We don't seem to have the same sense to know that collectively we are down to the last nickel in a lot of the world's resources, and in a much worse predicament.

I suspect the problem is that it is much easier to grope around in our own pocket and discover its limits than to look out on a vast world and realize it has limits, too. Our system has led us to believe that we can get down to our last nickel, but that through a lot of hard work and Yankee ingenuity we can go out there and win a lot of nickels back. It has not yet got through to us that we are spending a nickel to get a nickel. Our dilemma won't really be apparent until we discover it is costing us a dime to get just one nickel.

The tragedy of all this is that society as a whole won't know the extent of our collective problem until too late to save our cherished institutions. Our leaders let us drift and give us no national purpose to guide us aright.

We need fresh new ideas, set forth with confidence by leaders who can turn their backs on a profligate past. We need to turn spaceship technology into a "Spaceship Earth" philosophy.

The modern homesteader has already accepted that philosophy. He has determined to be as self-sufficient as possible on a small acreage. He works to correct the imbalance between his use of fossil fuels and what he knows is left for all to use. He works to use the incoming rays of the sun to provide most of his food and much of his energy needs. He is the pioneer of the coming Age of Scarcity and Want.

"I DECIDED TO END TRYING TO DECIDE. IT DOESN'T SEEM TO WORK EITHER."

HCN Letters

HOT WATER IN EGYPT

Dear HCN,

I am wondering about a type of water heater which they use in other countries and which, no doubt, uses a lot less energy.

The heater is one which doesn't keep a tank full of water hot. When one turns on his water faucet, it activates a pilot light which turns on a strong gas flame, heating the water instantly as it passes through the pipes and out the faucet.

I saw this in Egypt quite a few years ago, and saw it in England and France last summer. It must be the same kind which in an earlier version Cornelia Otis Skinner immortalized in **Our Hearts Were Young and Gay.** (The modern ones worked better than Skinner's did.)

It might be something which would conserve quite a lot of energy. I wonder where we could find out if such a thing is sold anywhere in the United States?

Sincerely,
Mary El-Negoumy
1014 S. 6th
Bozeman, Mont. 59715

(Editors' note: We don't know of any U.S. distributors of this system or any studies on its energy efficiency. We'll try to find out and urge any reader with information to contact HCN and Mary El-Negoumy.)

"MYTH OF INDEPENDENCE"

Dear HCN,

Tom Bell's editorial in the last HCN (Feb. 13, 1976) again unfurled the banner of Independence, that good old American virtue which everyone once had and which many seek today. He applauds that social movement which rejects the profligate use of resources and offers us security in the times of trouble ahead. The native beauty of such a stalwart life is admired and practiced by an increasingly large segment of the public.

I would be the last to deny Mr. Bell's hard earned rest, and few among us would disagree that, "The warning flags are flying on every hand." However it seems that if anything was learned from the ecological-environmental movement, it was the lesson of interdependence. The systems upon which our existence depends know no boundaries and may not be understood as discrete pieces. Everything is connected to everything else. Or as David Brower puts it, "It is impossible to do just one thing."

Those who would retire to the wilds and glory in the pristine surroundings all too often imagine that they are no longer bound to the misguided society from which they seek refuge. It would only take a forest management plan or a ski area or a mineral discovery to shatter the illusion of separation. The slow rending of ecosystems, water cycles, or the atmosphere are the more subtle threats which bind all of humanity into a whole.

Any alternative to our high energy-material intensive society is welcome. But I doubt that back to the land is the answer. Though I haven't performed the calculations, I wonder if there is enough good farmland to support all 200 million plus of us in this country. For the rest of the world, it obviously would not work. And even if it did, we would be isolated from each other, each ensconced in a private kingdom.

The solutions must, I feel, come from social invention and moral progress. As Francis Moore Lappe suggests in her article **Fantasies of Famine (Harpers** Feb. '75), a reduction of the meat-eating habits of Western culture could free millions of calories to feed hungry people. That would allow us a little time to attempt to solve the population problem.

As Mr. Bell truly states, "... the simpler lifestyles will prevail." Yet they will also be more complex. The population, resource, energy problems confronting us will allow no simple solution.

I for one would applaud the putting away of our myth of independence. Even Steward Brand of **Whole Earth Catalog** fame has recently stated, "Self sufficiency is an idea which has done more harm than good." Perhaps we can then honestly face the reality of our interdependence. After all, synergy may be the key to survival. A science fiction character once said, "Nothing is more useless than the answer to a wrong question." Let us seek answers to interdependent existence instead of seeking ways to be independent.

Bret Brunner
Greybull, Wyo.

CBS AND HCN

Dear HCN,

Keep up the good work. May you never get "bought up" by CBS or the like — as you reported happened to **Field & Stream!**

Keep fightin' the rapers and scrapers.

Martin E. Walter
Boulder, Colo.

High Country News

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HCN Editorials

Coal royalties are nice, but. . .

Gov. Arthur Link of North Dakota and Gov. Dick Lamm of Colorado did a good job of promoting the federal strip mining bill at the Western Governors Regional Energy Policy Office meeting in Washington Tuesday. The governors voted support of the Congressional bill and of attaching that bill to the coal leasing bill.

Lamm explained that he thought Interior was trying to play upon the governors' concern over the regulations proposed by Interior for coal leasing, diverting them from concern over the strip mining bill.

Wyoming Gov. Ed Herschler, however, seemed to fall for Interior's ploys. Herschler has established a reputation for defending controls on strip mining, so his decision to abstain from the vote on the strip mining bill came as a big disappointment.

While favoring the coal leasing bill and not opposing the strip mining bill, Herschler explained he did not believe it would be in Wyoming's best interests for the two acts to be considered together.

"My decision to abstain from the resolution was based upon my desire not to jeopardize the mineral royalty increase of such great significance to Wyoming for the chance to pass a surface mining law which would be of little value to Wyoming and might even be applied in ways contrary to our laws," he said.

He pointed out that with the leasing bill's provision to increase royalties returned to the states, Wyoming could, at current prices, get an additional $20 million per year — if the leasing bill is signed.

Herschler's statement is based upon his understanding that under proposed Interior leasing rules, the state's regulations would prevail and that under the proposed Congressional bill, the federal v. states' rights issue is unclear.

A careful reading of the regulations and of the bill indicate he's wrong. Interior has been trying to reassure us that stronger state regulations will not be preempted. But they add: "unless a) the Secretary determines that application of such laws and regulations would unreasonably and substantially prevent the mining of federal coal . . . and b) the Secretary determines that it is in the overriding national interest that such coal be produced. . . ."

The Congressional bill is much clearer. It says that "any state laws which provide for more stringent land use and environmental controls . . . than do the provisions of this Act . . . shall not be construed to be inconsistent with this Act."

Legal experts predict that the question of state v. federal controls over federal lands is bound to end up in court eventually. But the Congressional bill gives us more assurances in the meantime than Interior's vague rhetoric.

We could give Herschler the benefit of the doubt and believe he's just been too willing to believe Interior. However, he still is in the embarrassing position of saying he'll ignore the needs of his neighboring states which have weak reclamation protection — just so his state can get its hands on those royalties.

Whether or not those royalties will be coming is questionable anyway. Interior spokesmen have revealed that the leasing bill itself will likely be vetoed because of the royalties provisions.

When Rep. Teno Roncalio convinced the House to raise the royalties and to raise the states' share of them, we were glad, too, at the possibility of more money coming into the state to ease impact. But our joy was diluted by our fear that we would become too dependent upon royalty revenues and might lose track of our other priorities.

Herschler's action seems to confirm that fear. His compromising posture will become painfully uncomfortable if the leasing bill is vetoed anyway by the smooth-talking Ford Administration.

—MjA

Would you buy a coal lease from this man?

Federal coal leasing is resuming much sooner than the Interior Department had originally indicated when it lifted its leasing moratorium.

On Jan. 26 in Denver, Interior Secretary Thomas Kleppe told a press conference that the West wouldn't be "ravaged" by new leasing following the four-year moratorium. Kleppe didn't say exactly when leasing would resume, but one of his assistants assured the **Rocky Mountain News** that it couldn't be before mid-1977.

"Don't hold us to that," Kleppe said at the conference. "Don't think we should be sent to jail or anything if we don't meet that."

Less than a month later, Interior is already a year ahead of schedule. The Feb. 16 issue of **Coal Week** reports that Interior will call for nominations of federal coal lease tracts in late February or early March. Four lease sales are scheduled for this fiscal year, and eight sales the following year.

Only two areas — the eastern Powder River Basin of Wyoming and northwestern Colorado — now meet Interior's criteria for lease tracts, according to **Coal Week.** Both these areas have identified coal reserves, and completed management plans and environmental impact statements.

Don't worry Mr. Kleppe, we won't send you to jail. But we would like to know if your prediction about how the West will not be ravaged is any more accurate than your leasing timetable.

—BH

Open it up, govs

Public officials relinquish certain privileges, the most obvious of which is privacy. When a group of public officials, meets together to chat about things, they can't expect to keep it private, no matter how informal they claim the meeting to be.

The Western Governors Regional Energy Policy Office has not thrown people out of meetings — when they managed to find the meeting place. But that's not enough, and the Western COALition has rightly called them to task for not announcing their meeting places and agendas ahead of time.

If their purpose in meeting together is to assure more autonomy for the region and more clout behind regional objectives, then we would think they'd want to share ideas with the people of the region about what those objectives should be.

We won't go as far as the Western COALition and demand that the governors or their representatives meet with citizen organizations before each meeting to discuss agenda items. If citizens know what's going to be discussed a week or two in advance, they can make their own arrangements to communicate concerns.

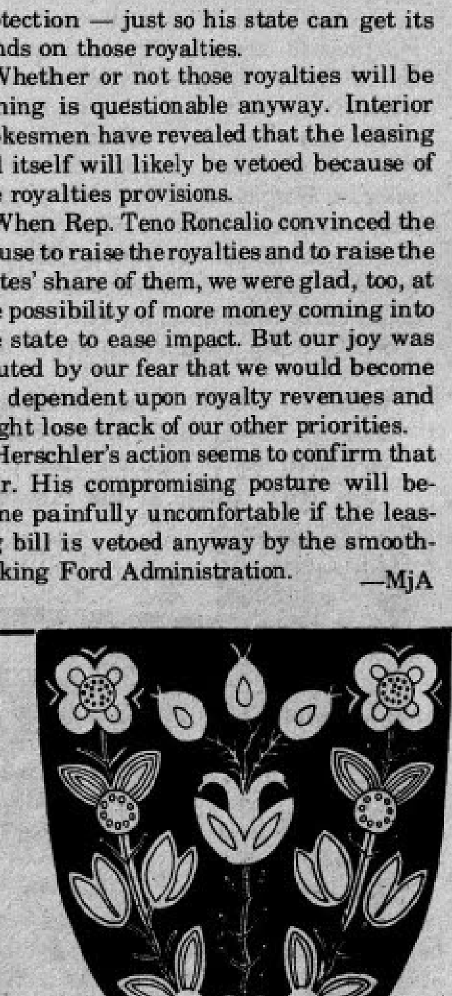
Of course having more people at the meetings will be tedious at times. Admittedly money and staff time will have to be allocated to get all those people on mailing lists to receive meeting notices and agendas. Democracy never was known for its efficiency.

But democratically, it's the right thing for elected officials to do. Legally, it should be required of a publically-funded group. And politically, it may turn out to be one of the smartest things they do.

—MjA

It's your choice!

We want to know what you think about **HCN.** Please answer the survey that appeared in the January 30th issue.



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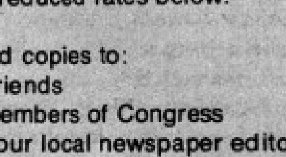

Solar System Companies

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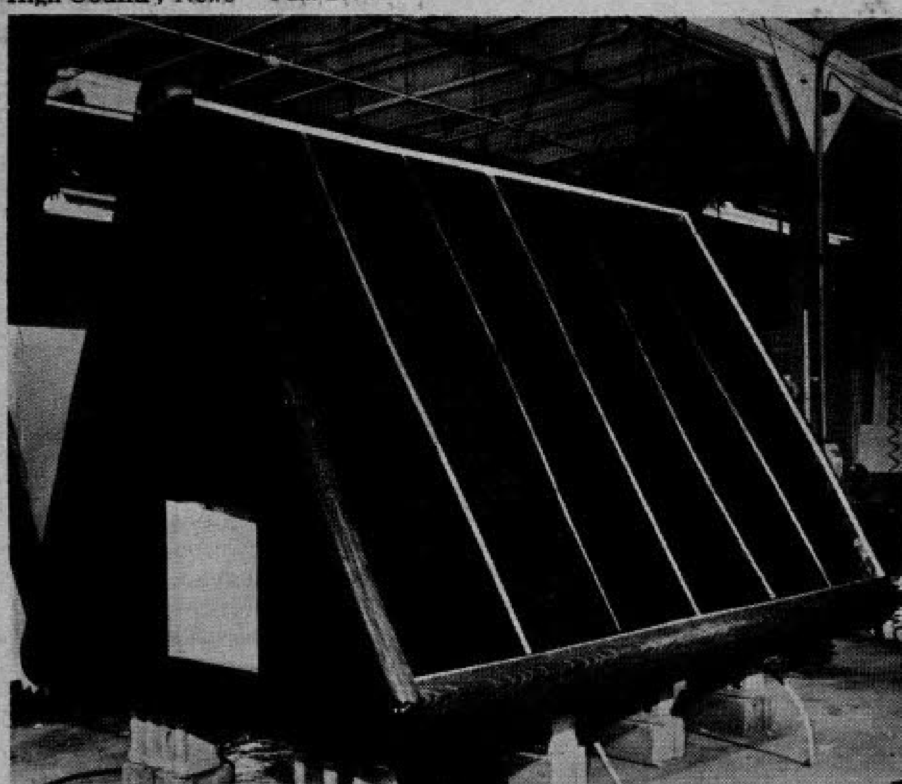


SOLAR MOBILE HOMES. Above an International Solarthermics Corp. solar furnace built by Champion Homebuilders Co. Champion just purchased a license to manufacture the system and offer it as an option with its mobile homes. Champion has cut the price of the system in half. Small manufacturers had been selling the unit for $4,500. Champion's advertised price is $2,295.

Sun salesmen. . .

(Continued from page 1)

what they call Keyes' "hard-sell" approach to marketing.

Despite such criticism — and reported harrassment by helicopters and office break-ins at ISC's Nederland, Colo., headquarters — after only 2½ years the company appears to be marching toward financial success: Three out of four solar installations in the U.S. today are ISC's design, Keyes says.

ISC itself does not manufacture the backyard solar furnace it developed. Instead, it has licensed 200 firms around the country to either manufacture or sell the units.

In January ISC made a potent alliance with Champion Homebuilders Company. Champion, a 22-year-old manufacturer of mobile homes and recreational vehicles, has purchased a license to manufacture ISC's furnaces at nine Champion factories and offer them as an option with their mobile homes. Champion also has an option to buy ISC and all of its patent and royalty rights to the solar furnace.

The alliance is exciting because Champion has cut the price of ISC's smallest unit, which includes collector, storage and installation, by about one-half — from $4,500 to $2,295. The cut brings installed systems costs down to $21-$24 per square foot of collector space.

The price drop has stimulated a sale of 700 units in 30 days. About 400 units had been sold in the 2½ years before Champion stepped in.

One of ISC's distributors warns that installation problems on existing houses may run costs up to $3,500 for the smallest unit, however. Jim McAdams indicated to HCN that these problems are being worked out to customer satisfaction, however. Future Systems and other ISC distributors guarantee working parts for one year, the structure for 10 years, and system performance for two years. McAdams says that no other solar system offers a performance guarantee.

About two years ago, in response to several scientists' questions about ISC, an investigator in the Boulder County district attorney's office began to probe ISC, its outlets, and other Denver-area companies in the solar energy business. The investigator, Philip Stern, says ISC originally "created ill-will and mistrust" by its "nonscientific approach" to marketing. Stern says he eventually persuaded ISC to change the wording of some of its promotional material.

An independent engineering firm has reported that the ISC unit "is a well-designed solar furnace" which can live up to the promises made about Btu output on its nameplate. But the nameplate promise is the crux of the controversy. Critics say that the promise is not big enough — that the three units offered for sale, which measure 96, 128, and 160 square feet, are too small to be significant heat producers in most houses.

For instance, an ISC nameplate says that a 96 square foot unit delivered 144,000 Btu on Feb. 15. But physicist Joseph H. Pope estimates that an average home in the Denver area requires about 500,000 Btu per winter day. Pope is president of the Boulder (Colo.) Solar Energy Society.

Keyes defends his product by saying that conservation measures could make the 96 square foot unit — or a slightly larger one — large enough for Denver homes in winter. Furthermore, Keyes believes, "solar furnaces should never be installed on drafty houses." The cost of additional collector space is considerably greater than the cost of caulking, insulation and storm windows, Keyes points out.

The ISC controversy points to the problems consumers face in choosing solar energy products, Philip Stern believes. In a rapidly expanding industry without any standards or regulation, the ability to ask intelligent questions is the best protection the consumer has, he says.

Keyes agrees that the "fast-buck" men are in the industry and warns consumers to tap the expertise of an engineer, an attorney, the Better Business Bureau, the Chamber of Commerce, and the local building department before they buy. He opposes — and has sent a lobbyist to Washington to oppose — any standards for the industry set by the federal government, however. A large red and yellow poster entitled "Solar Code of Ethics" hangs in his office. Energy conservation information is part of the over one million packets of "consumer information" which ISC has mailed out free in response to inquiries, he points out.

Quick, direct, and persuasive, Keyes so far has proven a keen competitor in an industry which he calls commercially inept. One critic even suggests that ISC is controversial because Keyes wants it that way — to gain exposure and increase sales.

When talking about his company, Keyes is alternately righteous, informative, and flattering to the layman. His system is designed for Archie Bunker, he says with pride. "You set a thermostat and then you don't mess with it." Nevertheless, Keyes believes the common man can understand the principles of solar heating and choose the best system for himself. "There is no magic to solar energy," he says.

What do Keyes and ISC have in mind for the future now that their solar furnace is in the hands of licensed distributors and Champion Homes? Keyes says he hopes to be ready to market an alternative to the heat pump, solar air conditioning, greenhouse, and a hot water heater by n[illegible] year.

For more information, contact International Solarthermics Corp., Box 397, Nederland, Colo. 80466.

Solar Energy Research Corp.

Sun systems for homes, tomatoes

In the beginning the founders of Solar Energy Research Corporation helped keep themselves in business by selling tomatoes from a solar heated greenhouse they constructed near Longmont, Colo.

Then, "the Arabs turned off the valve and people thought we were clairvoyant," says SERC President James Wiegand. Today, the corporation has moved to Denver — and out of the greenhouse business — to concentrate on research and engineering consulting, helping people design solar systems to suit their needs. The company also offers a control system and their patented "Thermo-Spray" collector and storage design.

SERC employs six full-time workers and 20 consultants. It has just become the second publicly-owned solar energy company in the U.S. (Solaron of Denver was the first.)

SERC drew attention in 1973 when it built the largest solar collector in Colorado. Its 1,900 square foot collector provided about two-thirds of the heat needed for a large greenhouse full of tomato and cucumber plants. The system was not only the largest — but one of the cheapest ever built. It was designed by Wiegand and John Freeman, who are both engineers.

The glass covering a collector is one of the most expensive components in a solar system. Wiegand and Freeman used two vinyl membranes instead. While the vinyl only lasts about two years, SERC has found, it costs 27 times less than glass — about three cents a square foot.

SERC is currently designing a home near Boulder, Colo. There, total costs are running about $5,000 or about $12 a square foot for a solar heating system designed to provide about 75% of the home's heating needs.

SERC designs both air and water collection systems for its clients and has worked on both old and new buildings. Its patented Thermo-Spray system sprays water onto the back of a black plastic heat-absorbing membrane, which is facing the sun. The water cascades down the back side of the absorber and falls into an underground water storage tank.

Cigar-box sized controls manufacturered by SERC automatically regulate the movement of the water from the storage tank to a heat exchanger. Air pumped through the exchanger is used to heat the building.

SERC has two franchised outlets — one in Pennsylvania and one in Arkansas.

All SERC products are guaranteed for two years. For more information contact Solar Energy Research Corp., 1228 15th St., Denver, Colo. 80202 or call (303)573-5499. To see SERC's first collector or buy a fresh tomato visit Solar Gardens, 10075 E. County Line Rd., Longmont, Colo. 80501 or call (303)772-4522.

NEXT ISSUE:
SOLAR HEATING, PART TWO
—Buy solar now or wait?
—Federal support and interference.
—A solar greenhouse company.
—Tips for shrewd shoppers.

DESIGN HELP. Using components manufactured by others, Solar Energy Research Corp. is in business to help people design solar systems to suit their needs. Below SERC president James Wiegand discusses his firm with people at the Home and Garden Show in Denver.

Solaron

University prof goes commercial

Nobody questions Solaron Corp.'s ability to manufacture a reliable solar energy system.

Certainly not the government — so far it has granted the company nine per cent of the federal funds available for demonstration of solar heating and cooling in homes. In addition, the National Bureau of Standards is using a Solaron collector to set standards for the entire industry.

Not industry — Solaron just installed a system on the rooftop of Gump Glass Co. at 1265 S. Broadway in Denver. It is believed to be the nation's first solar heating system in a commercial building.

Not even the financial community — a new branch of Golden Savings and Loan Association in Longmont now sports a Solaron collector.

The company's appeal to these somewhat conservative investors probably stems from the reputation of its technical director, Dr. George O. Lof. The very interests and skills that made him "a nut" 20 years ago, have earned him a solid position of respectability in the solar energy industry today. Lof has been living in solar heated homes of his own design since 1949 — first in Boulder, Colo., then in Denver. Lof is a professor and director of the Solar Energy Applications Lab at Colorado State University and a consultant to the National Science Foundation on various solar energy feasibility studies.

He and a man with business experience, John Bayless, started the Solaron Corp. in April, 1974. Since then Solaron has equipped 12 buildings with solar systems, is planning 30 more, and has contracts for an additional 14, according to Bayless, president of the firm.

Lof's long-term experience with solar systems is reassuring to many of his potential customers. While the principles behind solar heating and cooling are generally acknowledged to be simple and well understood, not many collectors have much operating history. Recent solar experiments built by large manufacturers and sponsored by the government have been riddled with such problems as corrosion, leaky pipes, and fuming insulation.

"Those problems are going to get solved," says Bayless, "but in the meantime at Solaron we take a very conservative approach." The firm refuses to use water collecting and storage systems, because it has 18 years of performance data on air-rock systems. Solaron doesn't use new selective coatings, which absorb more and re-radiate less heat than ordinary black paint, because the coatings' lifespan is uncertain.

In addition, Solaron doesn't encourage "retrofits" — installing solar systems on existing homes. Struggling with the problems sometimes presented by existing structures won't help the firm standardize or build sales volume — and may be expensive for the consumer, Bayless says. Solaron is building a nationwide distribution network of mass-produced solar system components.

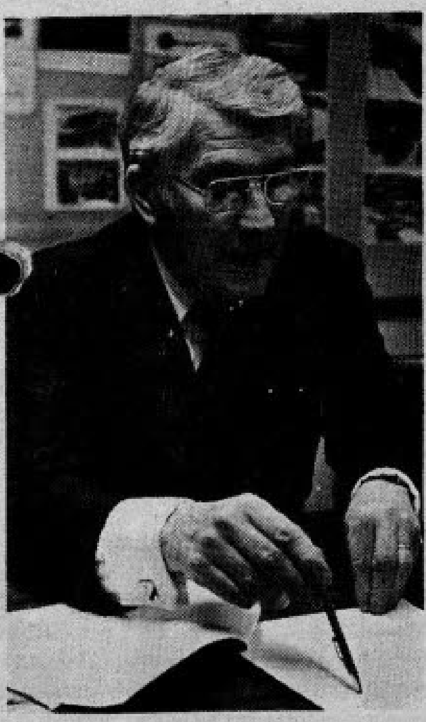
Bayless says his clientele has changed dramatically over the past year. The firm began by answering letters from curious individuals around the region. Now Bayless is often dealing with large business firms.

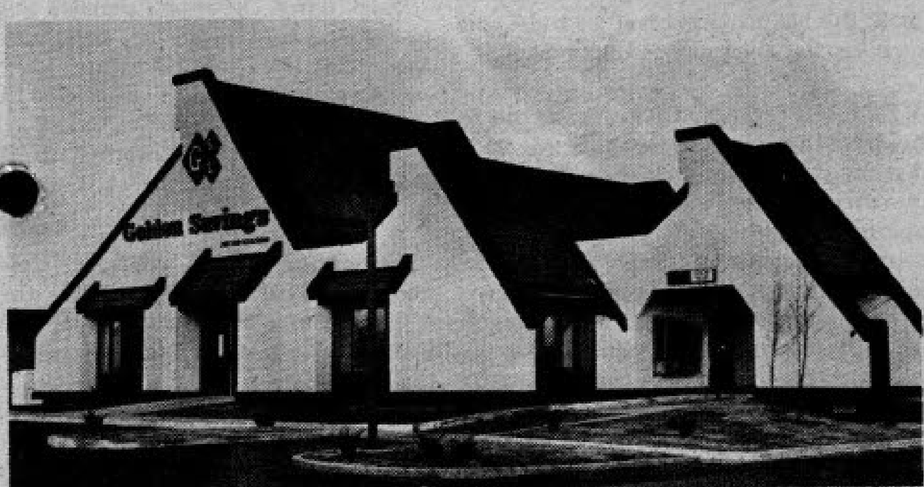
Another market area opening up for Solaron is the tract-home business. In Wonderland Hill, a 300-home subdivision on the west side of Boulder, Colo., homebuyers have an option to include a Solaron forced air heating system in their purchase. Solaron is making a similar arrangement with Terracore, which builds tract homes in five states.

Both Bayless and Lof see mistakes being made in the solar energy industry. "With TV and radio and newspaper advertising, you really don't need a product anymore," Lof says sadly. "It's not clear to me what is going to happen to those who market poorly engineered systems. Some may improve. It depends on whether they want to get rich or make a good product in the end."

Installed on new homes, Solaron systems cost anywhere from $3,000 to $15,000 — or about $17 per square foot of collector space.

For more information write Solaron, 4850 Olive St., Denver, Colo. 80022 or call (303) 289-2288.





SOLARON CONSERVATIVE. Above, Solaron's president John Bayless. Lower right, Longmont, Colorado's solar-heated bank — a Solaron installation.

Bayless says his company takes a conservative approach to the manufacture of this new product; they use only time-and temperature-tested materials.

Peter O. Wood, president of Energy Dynamics Corp.

Energy Dynamics Corp.

Thomason's idea has warmed a home since 1959

Dr. Harry E. Thomason is recognized as one of the pioneers of solar energy. He has been living in a solar heated home of his own design in Maryland since 1959.

His patented Solaris system heats water by sending it down the grooves in a corrugated aluminum roof-top collector to provide a household with hot water for domestic purposes and with hot rocks, which are the core of a forced air heating and cooling system.

The Thomason system, known for its simplicity and its use of easily obtainable materials, is sold in the Rocky Mountain region. The ambitious can buy Thomason's solar heating house plans through the Edmund Scientific Co. for $10. The less ambitious can purchase a ready-made Thomason-type unit from the Energy Dynamics Corp., based in Denver and Colorado Springs. The ready-made system costs $12-$15 per square foot, or around $5,000 to provide about 75% of the needs of a house in the Denver area. A do-it-yourselfer can save one-third of that cost, the company says.

The president of Energy Dynamics Corp., Peter O. Wood, lives in a $60,000 house in Colorado Springs, which is heated and cooled by a Solaris system.

Wood claims that the Solaris system avoids many of the problems associated with collectors that heat water, rather than air. The Solaris system drains itself by gravity whenever the pump stops, avoiding freezing anywhere in the system. To avoid corrosion, a black paint which has held up for over 15 years on Thomason's system separates the flow of water from the aluminum. No copper tubing is used, avoiding expense and possible maintenance problems, says Wood.

Most Solaris collectors are one-fourth to one-third the size of a home's floor space, Wood says.

Energy Dynamics Corp. has installed the system in an existing home in Aspen, Colo., and supplied collectors to a hog farm in eastern Colorado. The firm has also outfitted new homes in Colorado Springs and Vail, Colo.

Critics note that condensation forms on the glass cover of the Solaris collector, blocking some of the sun's rays. Tests have shown the condensation cuts down the radiation by less than 5%, however, Wood says.

For more information about the Solaris system contact Energy Dynamics Corp. at 327 W. Vermjo Ave., Colorado Springs, Colo. 80903, tele. (303) 475-0332 or at 1818 Gaylord St., Denver, Colo. 80206, tele. (303) 321-3314. Or write to Edmund Scientific Co., 150 Edscorp Building, Barrington, N.J. 08007.

FROM FLORIDA. CSI Solar System Division of Clearwater, Fla., sells hot water heaters and space heaters out of an office in Golden, Colo.

CSI Solar

Copper tubing warms water

Most homeowners already have a heat storage unit in their home — their hot water tank. A Florida company which has opened a branch in Golden, Colo., sells a product which can put sunpower into that reservoir.

The company, CSI Solar System Division of Clearwater, Fla., is offering solar water heaters. The company claims that heat absorbed on its black flat plate collector can provide about 80% of a household's hot water needs. In the Denver area, the savings can cut a family of four's entire utility bill by about 27%, the company claims.

The product is called Sol-Heet. The col-

(Continued on page 7)

Governors respond to attack from coalition

A newly formed group of environmentalists has accused the Western Governors Regional Energy Policy Office (WGREPO) of being submissive to the federal government on energy development and of insulating themselves from the public.

The governors, meeting this week in Washington, D.C., reacted by reaffirming their support of the federal strip mining bill and inviting environmentalists to attend the governors' meetings as observers.

In a letter to WGREPO, the new citizen group, Western COALition, said, "Formed with the idea that united the governors of the Western states would be able to deal more effectively with the federal government than separately, it now seems that WGREPO has been wooed and won by the Ford Administration and the Interior Department."

Formed by members of 67 citizen organizations, the Western COALition is designed to link citizen efforts in the Rocky Mountain and Great Plains region. Groups represented at the formative meeting included the United Plainsmen of North Dakota, Colorado Open Space Council (COSC), Friends of the Earth, Council on Utah Resources, Powder River Basin Resource Council of Wyoming, Northern Plains Resource Council, and Environmental Defense Fund.

WGREPO support of the federal loan subsidy program for synthetic fuel production and its lack of action on federal strip mining legislation were criticized by the coalition.

Most of the governors have expressed concern over the federal government overriding state reclamation requirements. However, the coalition says the language the governors proposed to solve the problem in the federal stripping regulations is weaker than that proposed by Congress in its strip mining bill. The strip mining bill has been vetoed twice.

"In addition," the coalition says, "almost all our state strip mine laws in the West fall so far short of the vetoed strip mining bill that these negotiating efforts with the Interior Department seem misdirected when the first priority should be passage of a strong federal bill."

The 10 governors, in Washington for a national meeting, voted support for a resolution asking that the federal strip mining bill be attached to the federal coal leasing bill. Three governors abstained — Ed Herschler of Wyoming, Raul Castro of Arizona, and Calvin Rampton of Utah. Herschler said he didn't want to risk the coal royalties included in the coal leasing bill by attaching it to the strip mining bill, which, he said, will likely be vetoed again.

"The surface mining act is not as important to Wyoming as the mineral leasing act," he said. He added that Wyoming has an "adequate" mine reclamation law and enforcement system.

The coalition also asked the governors to stop insulating themselves from public participation. They called for advance notice of WGREPO meetings and agendas, special meetings between governors and citizens, and rotating meeting places around the region. William Guy, director of the WGREPO office, wrote the response. "Environmental concerns are ranked very high in our consideration of energy issues," he said.

". . . But there is little likelihood that these meetings of governors or alternates would be staged as discussion groups with the various special interest and energy groups that wish to be heard." Guy added that the groups would be welcome for personal visits to the office or at meetings as observers.

"It's beyond the scope of our budget, our authorization, and our very definition" to do what the Western COALition asks, according to Ray Davidson, information officer for the WGREPO. There are eight staff members.

Davidson said the governors had voted at the beginning to have all information go out through the governors only, which he says includes agendas and resolutions. Guy advised each environmental group to contact its own governor if they wanted the governor to forward WGREPO information to them.

Both Herschler and Gov. Dick Lamm of Colorado this week indicated a willingness to "work something out" to improve communications.

Carolyn Johnson, chairman of the Western COALition, said she hoped a more efficient mailing system could be developed rather than having mailings go out from WGREPO, then to the governors, and then to interested citizens.

Discounting Davidson's protests about lack of time and money, she says, "Every agency has tried that old excuse. They're dealing with the public's business so they can deal with it publicly."

Headquarters of the Western COALition are at 2239 E. Colfax Room 211, Denver, CO 80206. Phone (303) 321-6588.

Headquarters for the Western Governors' Regional Energy Policy Office are at 4730 Oakland St., Denver, CO 80239. Phone (303)371-4280. States included in the organization are Arizona, Colorado, Montana, Nebraska, New Mexico, Nevada, South Dakota, Utah, and Wyoming. Gov. Thomas Judge of Montana was elected the new chairman of the group.

Valley faces new recreation boom

Lamm OK's new ski area near Vail

About a year ago, Colorado Gov. Dick Lamm's environmental advisor told **HCN** that a proposed ski development at Beaver Creek near Vail, Colo., would result in "massive urbanization which for a valley that is already overburdened would be undesirable." At that time, Lamm managed to delay the issuance of a U.S. Forest Service permit for the area.

This month, Lamm withdrew the state's objections to the development of Beaver Creek as a winter sports site. Issuance of a Forest Service permit is imminent, with rapid population growth soon to follow. The potential peak population is expected to be an additional 21,000 people in the Gore Creek-Upper Eagle River Valley. Permanent population in the area is expected to rise from 4,800 to 11,000 in 20 years.

Lamm says his approval was contingent on a 22% reduction in the size of overall development in the region. Representatives of two adjacent developments on private land agreed — if certain conditions are met — to reduce the number of dwelling units they will build.

In addition, the Forest Service permit will require that the Beaver Creek developer, Vail Associates, take certain steps to minimize damage to the environment, Lamm's office points out. The measures include reduction of air pollution through mass transit and limitation of fireplaces, protection of wildlife, monitoring of water pollution, and guarantee of minimum stream flow.

State approval came after a year of negotiations involving the state, Eagle County, the U.S. Forest Service, and Vail Associates. "Never before has the state been able to participate in an environmental assessment to the degree we have worked on this document," Lamm told the **Denver Post**.

Several environmental groups in Colorado have said that they think an environmental impact statement on the permit approval is necessary to fulfill the legal requirements of the National Environmental Policy Act. Unavoidable adverse impacts listed by the Forest Service in its environmental assessment of the project include:

—overall degradation of air in the region from auto traffic, dust during construction, and fireplace smoke.

—loss of habitat for up to 80 elk and 100 deer.

—loss of predicted annual production of 37,000 cubic feet of wood and 2.4 million pounds of hay and grasses suitable for livestock feed.

—loss of 1,650 acres in the proposed Holy Cross Wilderness Area.

MOUNT OF THE HOLY CROSS. If the Beaver Creek Ski Area is approved by the U.S. Forest Service, 1,650 acres of wild lands will have to be eliminated from the proposed Holy Cross Wilderness Area. This month, Gov. Dick Lamm of Colorado withdrew state objections to the development. The picture above, taken by William Henry Jackson in 1875 and printed courtesy of the U.S. Geological Survey, is not in the area proposed for development.

Eavesdropper

environmental news from around the world

PLANNING DICHOTOMY. Land use planning and anti-pollution planning may be mutually exclusive, concludes a draft federal report quoted by **Land Use Planning Reports.** "There may be a natural hostility between pollution-based planning and land use-based planning," according to the draft Department of Housing and Urban Development report. Air and water planning emphasizes dispersal of activities, while land use planning emphasizes concentrated development, and therein lies the conflict. "Ironically," states **LUP Reports,** "with the defeat of federal land use legislation, federal pollution-control programs have the greatest effect on federal land use planning."

CARRION FEAST. The U.S. Fish and Wildlife Service is serving selected carrion to a pair of wild bald eagles in Sandusky, Ohio. The agency's aim is to reduce the pesticide levels in the eagles' eggs by offering them clean food. Biologists have found that pesticides decrease the birds chances of reproducing. The pair now feasting in Sandusky have not raised young for many years.

WHERE ARE ROYALTIES? Congress' investigatory arm, the General Accounting Office (GAO), has accused the Bureau of Land Management of not collecting payments required by law from certain mining companies leasing public lands. In effect, companies holding and not developing BLM potash, phosphate, and sodium leases are paying no royalties, GAO says. If there has been no production on leased land, the law requires royalties to be paid on potential minimum production.

MERCURY BAN. Citing hazards to health, the Environmental Protection Agency has banned further production of mercury for use in most pesticides and paints. The agency's move was sparked by reports of members of a family in New Mexico who became blind and suffered nervous system damage after eating meat from pigs fed with mercury-treated seed. The agency will allow continued production of mercury to treat fabrics intended for outdoor use, for control of brown mold on freshly sawed lumber, and for control of Dutch Elm disease.

National parks protection weakened

Air rules soft on smelters

The bill upon which many hopes rested for preventing the giant Kaiparowits power plant has been seriously weakened by the Senate Public Works Committee, according to the National Clean Air Coalition.

The bill amending the Clean Air Act still requires that national parks and wildernesses be automatically designated as Class I air areas.

However, it now allows power plants or other pollution sources which would violate the Class I standards to be built near the parks or wilderness areas — if their emissions "would not be adverse to the air quality values for which the park was established."

The impact on the proposed Kaiparowits coal-fired power plant in southern Utah is unclear. The bill still says a pollution source could be blocked if it adversely affected air quality values of the parks and wilderness areas. However, a state must concur with the federal land manager in any decision to block the source.

The proposed Kaiparowits site is within 35 miles of Bryce Canyon National Park. Within a 250 mile radius are seven other national parks.

Utah Gov. Calvin Rampton has been a staunch proponent of the plant, pushing the Interior Department to stop studying the project and give its approval. He cites economic benefits to his state.

The committee also eliminated preliminary Class I status for national monuments and national recreation areas. They will be designated Class II initially. This amendment was made by Sen. Pete Domenici (R-N.M.).

An Interior Department report, recently revealed by the Sierra Club Legal Defense Fund, says 14 plants in the Southwest will "undoubtedly adversely affect the air quality" of national parks and monuments. The 14 plants are either existing or proposed.

SMELTERS' REPRIEVE

Copper smelters also were given special consideration by the committee, at the suggestion of Domenici, who amended the bill to permit "enforceable" supplemental control systems at existing nonferrous smelters.

Domenici's amendment was intended to help smelters in his home area. Kennecott Copper smelters in Utah and Nevada have been shut down this year because they were not meeting air regulations. Domenici's amendment allows them to use supplementary (intermittent) controls. Intermittent controls can mean shutting down a plant to avoid exceeding air quality levels. They are difficult to enforce.

Domenici had tried to amend the bill for all facilities to eliminate the definition of continuous controls. This would have meant the courts would have had to decide whether the Clean Air Act of 1970 permits the use of intermittent controls. This broader amendment failed. By including the definition in the bill, the committee effectively eliminated the use of intermittent controls as a final control mechanism, according to the National Clean Air Coalition.

STRENGTHEN LAW

Despite the weakening amendments, the coalition says this definition and other sections strengthen existing law.

Plants which want to expand in areas exceeding standards may do so only if the new source uses best available technology to control pollution, according to **Air-Water Pollution Report.** The firm's existing sources in the area must be in compliance or on schedule, and total emissions can not increase at the site. The total emissions from old and new facilities must be controlled to an extent which represents "reasonable progress toward the air standard."

Land use controls are authorized to maintain or to prevent further deterioration from any primary standard. ("Primary standard" means an air quality level which has been determined to be necessary to maintain public health.)

Revisions of the bill took 10 months in the committee. When it was sent to the Senate, Sen. Gary Hart (D-Colo.) had serious enough reservations about the bill that he voted against it. Hart had pushed for a stronger bill.

Votes on 12 important committee decisions were tallied by the coalition and are indicated below as percentages of votes each Senator gave for strengthening amendments. The coalitions notes these votes do not completely reflect the leadership taken by various committee members on different issues since two of the more important issues were never voted on.

Western senators' votes: Sen. Gary Hart 100% (D-Colo.); Sen. Quentin N. Burdick 58% (D-N.D.); Sen. Pete Domenici 33% (R-N.M.); Sen. Joseph Montoya 30% (D-N.M.); Sen. Mike Gravel 9% (D-Alaska); Sen. James McClure 0% (R-Idaho).

The bill is expected to come up on the Senate floor during March.

HOUSE BILL

The House bill is still in the House Commerce Committee. House committee members recently voted 23 to 19 not to strike requirements for continuous emissions controls. Final committee action is expected soon.

CLEAN AIR FOR BRYCE CANYON. The National Park Service is concerned with the impact of further air pollution on the scenic vistas and public enjoyment of parklands, according to a park service document released by the Sierra Club. One of the parks mentioned in the document is Bryce Canyon National Park, which is 35 miles from the proposed site for the Kaiparowits power plant. National Park Service photo by M. W. Williams.

Buffalo face winter squarely

by Jeremy Schmidt

There are over 1,000 bison in Yellowstone National Park. Unlike the migrating birds or the hibernating animals, they must face winter squarely on its own terms. Winter is a continual struggle for them, but every spring, along with the warmer air and vast fields of green forage, come the new calves.

Park biologist Dr. Mary Meagher suggests several of the factors which help in the park.

First, in areas of thermal influence, where the ground is slightly warmer than normal, the snow is less deep and forage is consequently easier to obtain. Hot water keeps many streams open all winter, which serve as travel routes through deep snow areas, and provide forage along snow-free banks. Areas of intense thermal activity, such as around geysers and hot springs, are less frequently used than the slightly-warmed areas, presumably because of the very limited forage in such places. Nonetheless, it seems that these areas become critical to survival in particularly severe winters.

Second, bison are admirably suited for grazing through deep snow. "Animated snowplows," Dr. Meagher calls them. The head is the plow. The hump over the shoulders is the superstructure which supports the tremendous muscular driving system. In Yellowstone, which has the deepest snows of any place where bison still survive in a wild state, the bison have the largest humps. Bison have been observed feeding in snow four feet deep — conditions which provide a selective pressure for animals with larger humps.

Third, bison must have extremely efficient digestive capability. With amazingly tiny areas of exposed grass, to which they return time and again, it is hard to believe that they are taking in much volume. Yet they feed in this manner for at least half the year, which suggests that they make very efficient use of every available ounce of forage.

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Much of the information in this article was borrowed from Mary Meagher's recently-published book, **The Bison of Yellowstone National Park.** This book is available at any of the visitor centers in Yellowstone.

Sun salesmen. . .

(Continued from page 5)

lector is made of copper tubing snaked across a flat metal plate, covered by glass. The copper and the plate are painted with a special black paint designed to absorb a maximum of the sun's rays and reflect a minimum back through the glass. When the plate is heated by the sun, water running through the copper tubing is heated and pumped from the collector into the home's hot water storage tank.

Sol-Heet collectors are expensive, which may reflect the cost of the copper tubing and the specialized paint. Its hot water heating systems range from $22 a square foot to supply the larger tanks to $39 a square foot for smaller tanks. This does not include the cost of the glass covering the collector (which could add an additional $2.50 a square foot), installation, or controls.

A 14 square foot collector big enough to heat a 30-50 gallon hot water tank costs $550, says Jerry Kaye, western regional manager of CSI Solar Systems Division. A back-up system is recommended for times when the sun isn't shining and hot water is needed. A larger, 20 square foot Sol-Heet system to warm a 40-90 gallon water tank costs $615. The largest model, 40 square feet, will heat an 80-175 gallon tank and costs $905, Kaye says. The prices do not include installation, controls, or glass.

John Bayless of Solaron, another company which manufactures solar water heaters, claims that the specialized paints haven't been proven to withstand a collector's high temperatures over the years. His company has chosen to use Pittsburgh paint, which has long-term test data available.

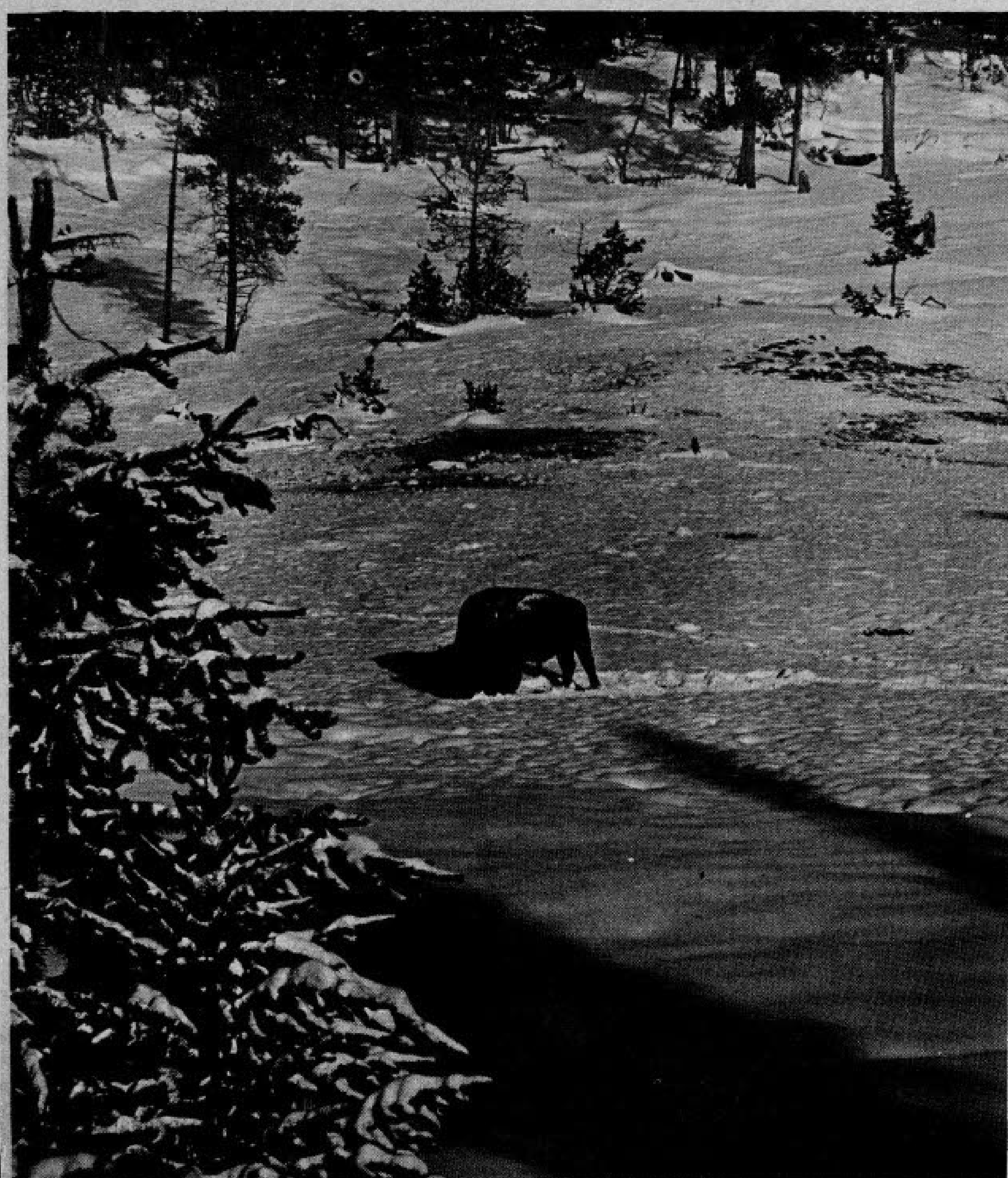
Kaye defends his firm's use of the specialized paint, saying that they have had no problems with it in the 4½ years the company has used it.

CSI uses the same collectors to provide space heating. With installation and storage tank included, costs range from $31 to $35 a square foot, not including installation, controls, or glass. Only about 120 feet of collector space is enough to provide about 85% of the heating needs of a well-insulated 1,500 square foot house in Colorado, claims CSI. Other companies recommend bigger collectors — from one-fourth to one-half of a home's floor area.

CSI is not the only company to challenge the industry's general rules about collector space. John Keyes of International Solarthermics Corp. claims that extremely well-insulated buildings matched with well-designed collectors and storage systems can reduce the need for sprawling collectors. Keyes' collectors come in 96, 128, and 160 square foot sizes. (See separate story.)

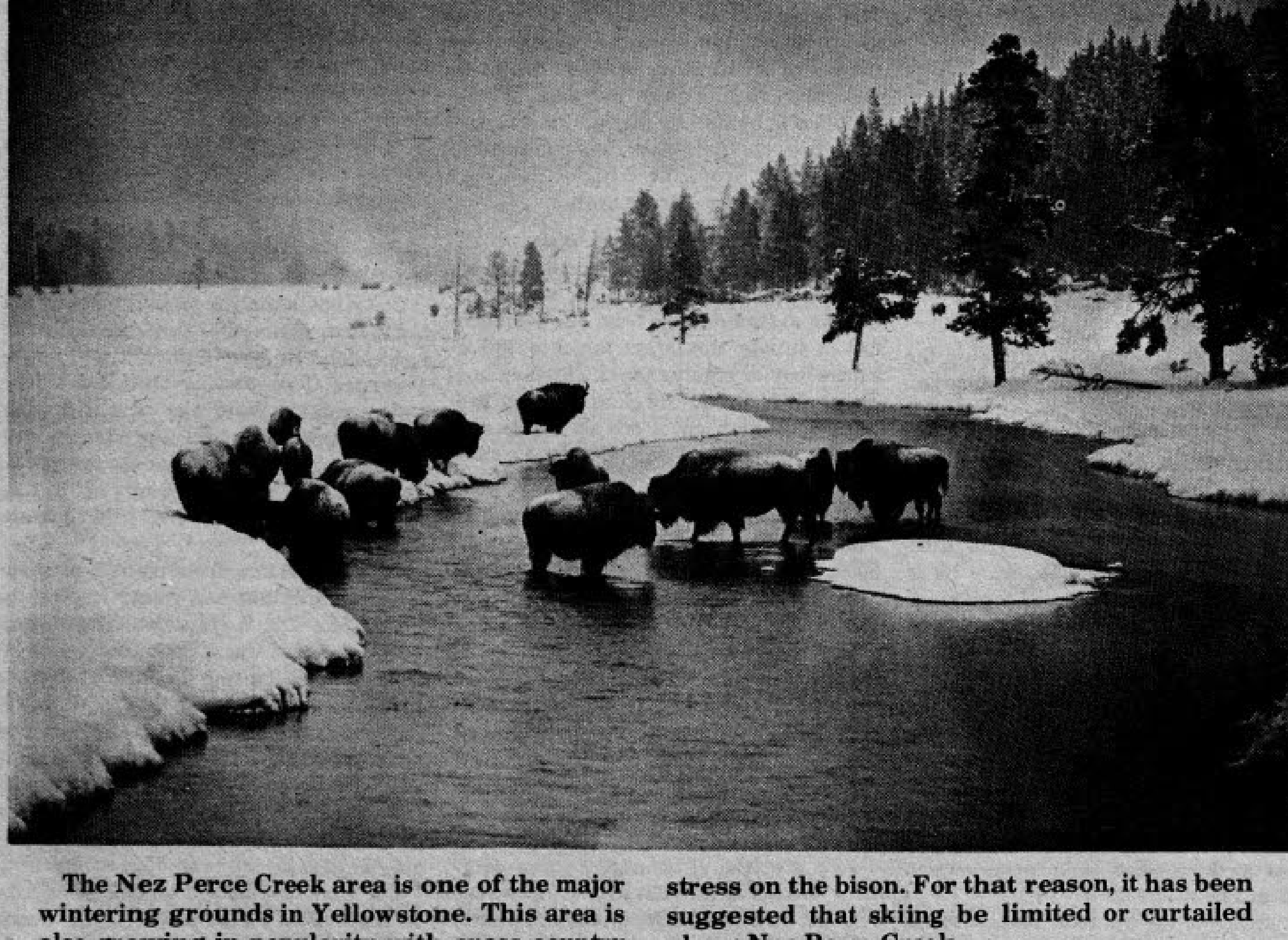
In cold climates, freezing is a problem with systems that use water in pipes to collect the sun. Kaye says his company uses a patented freeze protector, which he says prevents freezing down to 40 degrees below zero. Below that temperature, he says, anti-freeze must be added to the water. No Sol-Heet systems have been installed in Colorado yet, but units are working successfully in the cold-weather states of New York, North Dakota, and Wisconsin, Kaye says.

For more information on CSI Solar Systems Division's products contact: Jerry Kaye, western regional manager, Rt. No. 4, Box 409, Golden, Colo. 80401 or call (303) 642-3063.



While snow may measure four or five feet deep in the woods around the thermal areas, it is much shallower where the ground is warm. Sometimes, even in mid-winter, it will melt off entirely. Then the grass and sedge will begin to grow green as though it were May.

The unusually large shoulder hump is a c
bison.



The Nez Perce Creek area is one of the major wintering grounds in Yellowstone. This area is also growing in popularity with cross country skiers, who create an unintentional but severe stress on the bison. For that reason, it has been suggested that skiing be limited or curtailed along Nez Perce Creek.

Bison are well-suited for grazing in deep snow, using their heads as plows. When the snow is crusted and icy, they

Buffler: one bison's story

Text and photos by Jeremy Schmidt

a characteristic of Yellowstone

Outside my window is a river, a meadow, a forest, a buffler. The river is the Firehole. The meadow is a thermal area, part of the Upper Geyser Basin, a warm island of open space in the great lodgepole forest which covers Yellowstone National Park. And what I affectionately call buffler is really a bison, my bison, the largest, quietest and most steadfast of my winter companions. He makes me feel very lucky.

I feel lucky not just because one bison of the over 1,000 bison which roam Yellowstone Park has chosen this particular meadow for his winter quarters. Even more, we are all lucky that there are any bison to look at at all. They had a close call.

Yellowstone very nearly lost its last bison. The year was 1902. Despite the preservation intent behind establishing Yellowstone as the first national park 30 years before, random killing, food-hunting, and the most serious of all — head-hunting — had diminished the wild native population in Yellowstone to an estimated 22 animals.

Until recently, I believed that the near extermination of bison was the result of senseless, thoughtless slaughter with no purpose. Just another example of an expanding nation's frontier attitude and belief in endless quantity. But now I have studied my bison's story, or that of his ancestors, and I have learned that it was a calculated policy.

The military mind understood a rudiment of ecology: the interdependence of Indian and bison. General Phillip Sheridan praised the hide hunters, saying that they "have done in the last two years and will do in the next years, more to settle the vexing Indian question than the entire regular Army has done in the last 30 years. They are destroying the Indian's commissary; and it is a well known fact that an army losing its base of supplies is placed at a great disadvantage."

Although there were serious legislative attempts in the 1870s and 1880s to protect these animals, the bison stood squarely in the path of westward expansion.

The thrill-seekers, the tongue hunters, the hide merchants, and the bone-pickers had all gone with the bison before the head trade hit the big time. In 1894, in Bozeman, Mont., a mountable bison head was worth from $400 to $1,000. The law of supply and demand at its cruel worst. Were it not for Teddy Roosevelt, increasingly vocal conservation groups, and the fact that the American Indian had for the most part gone the way of the great herds, the Yellowstone Bison Ranch might never have been started, the extermination of a great animal might have been assured, and my giant bull might never have found his way into this meadow last fall.

He stands, now, survivor of 60 million, in the belly-deep snows of February, his head buried in the trench of his own making. He is grazing, but it doesn't seem to be doing him much good. He grows thinner with every passing week. His ribs have begun to cast shadows across his hide. When he came to the meadow after the first big snow in November, fat from a long summer, his great shaggy mane was in its prime. He has been here since, and we have watched the winter pass through our meadow, the two of us. He from his side. I from mine.

The meadow is a thermal area, the ground warm and steamy, the snow less deep than in the woods. That is why he is here. Still, he has long since cropped the grass off the bare patches, and is now working the meadow margins. His huge head, 100 pounds heavy, plows through the snow, piling it up on both sides of his trench. He pushes a wet and naked nose into the subzero pack, feeding on long-frozen, dry autumn grasses. As he pushes the trench forward, new snow and wind-drift close it up behind him. There can be little gained through such effort. From my warm, well-stocked kitchen, it seems that being a bison in the winter is a dreadful losing business. But he has nowhere to go.

Just now he faces away from me. All I can see are his strangely delicate hindquarters, rising to the massive hump of shoulders and shag which hides his head. I tap my binoculars sharply on the window several times. It is the inner window of two, and bison rarely respond to whistles, grunts, shouts, or car horns. But something in my knock, however slight, causes that great hairy head to swing to one side, ponderously, massively, like an ancient iron-bound oak door, and one brown frost-rimmed eye fixes on me as through a knothole.

Does he see me? I stare for a long moment at that frozen half-face before it swings back behind those immense shoulders. Grazing again. Grazing and trenching as he is every morning in the grey dawn when I first look out the window — as he is every evening when darkness robs my view of him. I am moved by the persistence of this animal, his grip on life, and by what seems to be his sense of purpose, of dignity.

Heave, bull. Heave. Heave it away. Heave away the snow. Heave winter into spring. And may you once again stand fat in the belly deep sedge of a summer's meadow.

will use their front hooves to first break the surface, and then plow it aside.

Areas of thermal influence are utilized primarily by herd groups of mixed sex and age. Although bulls wintering either alone or in small groups do use such areas, more than half of the bulls which are not part of mixed herd groups winter in areas with no thermal influence. Some even stay high in the normal summer range.

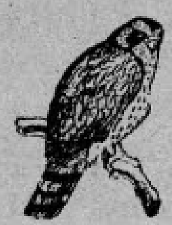
(See related buffalo story on page 7.)

Big Sky energy need questioned

A proposed transmission line from Dillon to Clyde Park, Mont., threatens potential wilderness and could spawn undesirable subdividing in the scenic Gallatin Canyon, according to the Center for the Public Interest (CPI).

The 161 kilovolt power line is proposed by Montana Power Company (MPC), and one of its main purposes is to deliver additional power to the Big Sky ski resort in Gallatin Canyon south of Bozeman.

MPC, which is also a major stockholder in Big Sky, projects a 500% winter peak



demand increase in the near future. This projected load amounts to more electricity than the present consumption of most of the entire Gallatin Valley — including Bozeman, Belgrade, Manhattan, and the surrounding rural districts. Big Sky presently has 200 permanent residents, but thousands come to ski in the winter.

Rick Applegate of CPI says Big Sky is now served by a 69 kilovolt line running up Gallatin Canyon. "Whether this projected demand at a second-home resort can be considered as 'need' is highly debatable," he says. "If it is need, what would **not** qualify?"

The state Major Facilities Siting Act requires the state Department of Natural Resources to consider two major criteria for new power lines — need and environmental compatibility.

Applegate says, "One of the most significant impacts is on the potential wilderness that stretches from the Spanish Peaks Primitive Area nearly all the way to Hebgen Lake (near West Yellowstone). This pristine, highly scenic country could become one of the larger wilderness units in the country." The proposed power line would cut across the northern end of this potential wilderness.

Applegate also expects secondary land development to occur near Big Sky as a result of the new line. "Readily available electricity service is a large drawing card for secondary development," he says. "In particular, those lands west of Big Sky in the Jack Creek-Cedar Creek areas will be made ripely developable by the proposed line and attendant road construction. A sizeable acreage is privately owned — much by Burlington Northern, a Big Sky stockholder. Land use controls are not now or foreseeably in effect there."

Applegate offers several alternatives to the MPC proposal. He suggests instituting a vigorous energy conservation plan at Big Sky, upgrading the existing power line servicing the resort if necessary, and above all, "reassessing Big Sky-Gallatin Canyon growth."

The Department of Natural Resources has released a draft environmental impact statement on the project. Copies of the document are available from the DNR, 32 South Ewing, Helena, Mont. 59601.

Public hearings on the proposal will be held March 2 in the Wilson Auditorium in Bozeman at 7:00 p.m. and March 3 at the elementary school multipurpose room in Ennis at 7:00 p.m.

Written comments should be sent to the DNR by March 8.

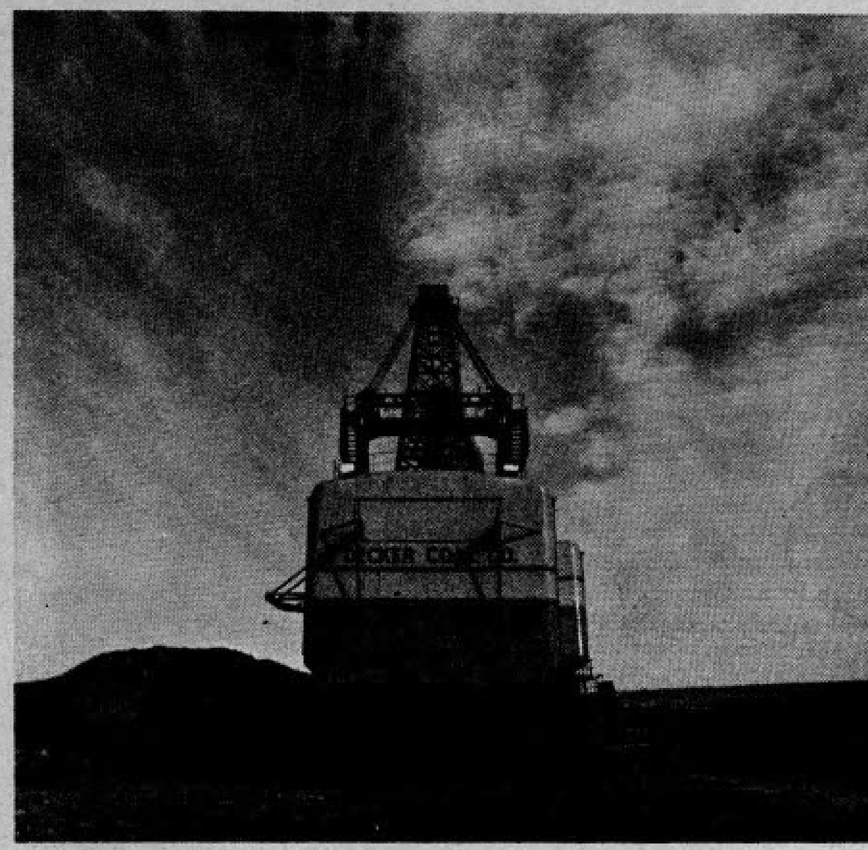


Photo by Terry Moore

Definition of mining issue in Montana

The Northern Plains Resource Council (NPRC) is questioning a decision of the Montana Board of Natural Resources, claiming that it "seriously challenges" Montana's strip mine law. The NPRC is a rancher-environmental group in Montana.

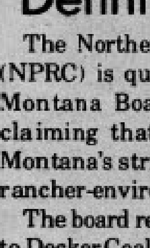
The board recently granted an easement to Decker Coal Company for a railroad spur which involves the company removing overburden from an area proposed for a new mine. The company does not have a strip mining permit for the new mine yet. The board's approval includes a condition, however, that all applicable state and federal regulations must be complied with.

The State Department of Lands is now in the process of deciding whether or not Decker must have a strip mining permit before the overburden can be removed.

"It is a very difficult legal question," according to Leo Berry, legal counsel for the lands department. He told **HCN** that the strip mining act defines mining as the process of removing overburden "for the purpose of recovering minerals." Decker is asking to remove the overburden to use it as fill for the railroad spur.

Anne Charter, chairman of the NPRC, quotes an opinion of the state attorney general and asserts that "Removing overburden . . . as proposed by Decker clearly will constitute strip mining since they plan to mine the coal under these areas."

"Montana's strip mine law is widely praised as the 'toughest in the nation.' However, without proper enforcement and administration that law is nothing more than a paper tiger," she says.



The HCN Hot Line

energy news from across the country

ALASKA LEASES APPROVED. The Interior Department plans to lease 1.1 million acres in the northern Gulf of Alaska and 12.8 million acres in the western Gulf of Alaska for oil and gas, despite protests from the state and the President's environmental advisors. Gov. Jay Hammond said he was "extremely disappointed" and urged a two-year delay to allow the state to prepare for onshore impact and to conduct further environmental studies on the impacts on the Gulf's valuable fishery. The U.S. Environmental Protection Agency and the President's Council on Environmental Quality had called for an indefinite postponement of the leasing.

CONSERVATION BILL. The Energy Conservation Act of 1976 has been introduced in the House and Senate. The bill provides loans for energy saving practices such as insulating existing buildings and installing solar power or wind power systems. Two of the sponsors are Rep. Tim Wirth (D-Colo.) and Sen. Edward Kennedy (D-Mass.).

MONEY FOR SOLAR DEVICES. The federal government is spending $1 million to finance the building of solar energy devices for 143 dwellings in the U.S. Some of the units will provide home heating, some just hot water, and some a combination of the two. A few will develop both heating and cooling systems. The U.S. Department of Housing and Urban Development, which administers the program, says that more funds will be available to fund projects in the summer or fall of this year. Groups funded in the Rocky Mountain region include: Wayne Nichols Co. of Sante Fe, N.M.; ECO-ERA of Fort Collins, Colo.; Perl-Mack Enterprises of Denver, Colo.; Solar Engineering Co. of Fort Collins, Colo.; Stonebraker Investments of Boulder, Colo.; Waverly Homes of Westminster, Colo; Terracor-Utah of Salt Lake City, Utah; Pueblo Housing Authority of Pueblo, Colo.; and the City of Colorado Springs, Colo.

TVA RESISTS KENTUCKY REGS. Attorneys for Kentucky want the U.S. Supreme Court to force the Tennessee Valley Authority (TVA) to comply with state air quality regulations, which include obtaining a state permit. But the TVA insists that there are "two centuries of precedent holding that the states have no power to require licenses for federal activities conducted within their boundaries," according to the **Courier-Journal**. TVA owns two of the largest air pollution sources in the state, both coal-fired power plants.

Reckoning from Washington

by Lee Catterall

Strategists in Congress are shelving an important proposal to revamp the nation's coal leasing law until they've had another crack at enacting a strip mining bill.

Different versions of the coal leasing bill have passed the Senate and House. Normally, representatives of both chambers would quickly meet to work out those differences, and Congress then would take final action on the compromise bill.

All that will have to wait.

Rep. John Melcher (D-Mont.) is heading a drive in the House Interior Committee to bring to the House floor a strip mining bill akin to the one killed last year by President Gerald R. Ford's veto. Sen. Lee Metcalf (D-Mont.), who heads the group of Senators who plan eventually to meet with Congressmen on the leasing bills' differences, has agreed to await the outcome of Melcher's attempt.

"Without a strip mining bill, there isn't any need for the federal coal leasing amendments," Melcher told this column, "because you have to have standards for reclamation first.

"I think it behooves us to move the strip mining bill through the Congress and put it on the President's desk first," Melcher said.

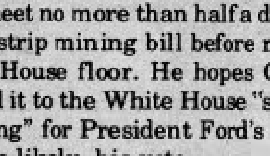
Melcher wants the Interior Committee to meet no more than half a dozen times on the strip mining bill before reporting it to the House floor. He hopes Congress will send it to the White House "sometime this spring" for President Ford's signature or, more likely, his veto.

"If he signs it, fine," Melcher said, "and if he doesn't and we can override the veto, we've still got a bill. And I think we can override the veto."

Last year, the House sustained the President's veto by a mere three-vote margin. Melcher has made slight changes in the bill and said he has assurances from several Congressmen who opposed last year's bill that they'll support the new bill.

"However," he added, "if the unfortunate thing happens that we can't override his veto and the bill goes down the tube again, then we can still look to the federal coal leasing act and see what we're going to do about applying strip mining standards to at least federal coal."

The Senate version of the coal leasing bill already contains that proposal; anybody who would lease federal coal would have to agree to reclaim the land in the way prescribed by the strip mining bill. That Senate provision is the main difference between the House and Senate bills.



(Editors' note: The House Interior Committee voted 28 to 11 Tuesday to approve the federal strip mining bill, sending it to the floor where action is expected within two weeks. There is still a "possibility" that the strip mining bill will be combined with the leasing bill into a coal package that Congressional observers believe would be difficult for President Ford to veto, according to Louise Dunlap of the Environmental Policy Center. Dunlap told **HCN** that rural electric associations and the Ford Administration are most active in opposing the strip mining bill.)

Colstrip plant hearing battle continues to flare

Hearings on the proposed Colstrip power plant units 3 and 4 in eastern Montana have been going on for almost a year. Testifying as a taxpayer, Melville rancher John Hanson told the Board of Natural Resources: "I don't believe I've been getting my money's worth at these hearings. The hearings should have been completed last year."

Gary Wicks, director of the Department of Natural Resources, told the board, "We know now how they can be shortened and decisions made more expeditiously." The hearings mark the first major test of the state's Major Facility Siting Act, he said.

Despite the length of the hearings, significant testimony continues to be presented. The following are highlights from testimony this past month:

—Paul E. Polzin of the Bureau of Business and Economic Research at the University of Montana testified as a witness for the five Northwest utilities seeking to build Colstrip units 3 and 4. Polzin projected that Montana will have 17,400 to 25,000 unemployed residents in 1980 and, at best, per-capita income well below the national average. "It would require a significant addition to Montana's economic base to provide sufficient jobs to eliminate the job gap," he said. Under cross-examination by Colstrip opponents, Polzin said units 3 and 4 wouldn't turn the state's economy around — but they would provide needed jobs.

—Timothy W. Devitt, vice-president of a Cincinnati consulting firm and a chemical engineer, testified that sulfur dioxide pollution control equipment planned for units 3 and 4 is not the best available to protect the environment. He said the proposed system would only control 40% of the sulfur emissions."Given the present state of the art, it is possible to design a system to remove at least 90% . . . and operate such a system at an availability of at least 90%."

—State geologist S. L. Groff testified that he didn't think the utilities were adequately stressing the need for additional electrical power generation in Montana. "Electricity is a key factor in moving from a recession to relative prosperity," he said.

—Director Gary Wicks said that the Department of Natural Resources' stand against units 3 and 4 "is perfectly consistent with the department's actions in support of economic growth, increased employment opportunities for Montanans, and the sound development of Montana's resources." When asked about potential construction jobs that would be foregone, Wicks stressed the numerous potential jobs available if the state concentrated on shipping coal out of state by rail to power plants in other areas where the power is needed.

—Arnold Cogan, who was Oregon's first state planning coordinator, said that the utilities and the state had overestimated the capacity of local governmental agencies to cope with impact from units 3 and 4. "Efforts currently under way to undertake some planning are insufficient to the challenge at hand," he said. Cogan said the state must play a strong role in assisting local governments.

—Lt. Gov. Bill Christiansen, speaking as a private citizen, said: "As yet, the applicants have not demonstrated that any alternatives to the construction site at Colstrip or to the erection of two 700 megawatt plants were given serious consideration." The attorney for Montana Power Company pointed out that 10 possible sites were evaluated. The attorney for the Department of Natural Resources countered that there were "no written studies on any other sites."

Citizen testimony in favor of units 3 and 4 is running well ahead of testimony against development, according to Bill Cunningham of the Environmental Information Center.

The Board of Natural Resources will make a decision on whether or not to license units 3 and 4 in late May or early June. The board's hearings should end by mid-March.

ENERGY E 1976 HCN

energy news of the Rockies and Great Plains

NO DECISION DELAY. Although the utilities planning to build the Kaiparowits power plant in southern Utah have announced a one-year delay in their plans, the Interior Department plans no further delays. "The Secretary of the Interior is still firmly committed to making a decision regarding Kaiparowits shortly after April 1, 1976," according to the Sierra Club's **Kaiparowits Report.** The final environmental impact statement on the project is due March 1, 1976.

RATE DECREASE ADVISED. John C. Wilson, an economic consultant from Washington, D.C., says the Montana Public Service Commission (PSC) should lower, not raise, Montana Power Company's rates for electricity and natural gas. Wilson was hired by the PSC to study Montana Power's request for a $44.5 million a year rate boost. MPC vice-president for finance C. W. Raff said Wilson "apparently has introduced a new and unique accounting treatment in his computations." Raff called the study "wholly arbitrary and unjustified."

FLATHEAD LEASE DELAY. The Bureau of Land Management (BLM) has agreed not to grant any oil or gas leases on federal lands in the North Fork area of the Flathead River in Montana until the Cabin Creek international resource issue is resolved. The United States has been trying to gain assurances from the Canadian government that a proposed coal open pit mine at Cabin Creek, British Columbia, will not pollute the Flathead River and Glacier National Park. Rep. Max Baucus (D-Mont.) had urged the BLM to delay leasing in the North Fork to pave the way to a settlement with the Canadians. Meanwhile, state lands commissioner Ted Schwinden says he plans to offer state lands in the North Fork for oil and gas leases despite the federal delay.

FISHING HOLE MAY BECOME MUD HOLE

The Wyoming Game and Fish Department has urged the state Industrial Siting Council not to issue a permit for the proposed Laramie River Station power plant, near Wheatland, Wyo. The department says it needs more information on fish and wildlife impacts of the project.

As presently planned, the power plant would dry up a popular Laramie plains fishing spot, Lake Ione (pictured above). The 100-acre, man-made lake is managed by the department. Last year it received 6,500 fisherman-days of use. Water used to fill the lake comes from the Boughton Ditch, which is scheduled to be diverted to the power plant.

The department is also concerned about impacts of the Corn Creek Irrigation Project which is related to the power plant development. The irrigation project could have detrimental effects on fishing in the North Platte River, says the department. Water for the power plant and the irrigation project would be drawn from the Laramie River, which flows into the North Platte.

The utilities desiring to build the power plant claim it will have "minimal adverse effects" on wildlife, but this "is not founded on a full disclosure of facts," says the department. The department has requested completion of an environmental impact statement before the siting council considers granting a permit.

NO SURFACE PROTECTION. "Surface owner protection and land reclamation as provided by Wyoming and Montana strip mine laws will only apply if the Interior Department doesn't want the coal underneath," says Lucie Bourdon of the Powder River Basin Resource Council. Bourdon says the state laws protect surface owners — over state or federal coal, but the Interior Department's new regulations allow the federal government to ignore stringent state laws if getting out the federal coal is in "the overriding national interest."

NEVADA POWER PROPOSES PLANT. Nevada Power Company has submitted a proposal to the Bureau of Land Management (BLM) for the Allen-Warner Valley Energy System. The system involves a 2,000 megawatt Warner Valley Power Plant near St. George, Utah; a coal mine near Bryce Canyon National Park; and associated coal slurry pipelines, transmission lines, and water facilities. BLM is expected to begin preparation of an environmental impact statement on the project soon.

NEW MINES APPROVED. Interior Secretary Thomas Kleppe has approved mining plans for four new strip mining operations on federal leases in Wyoming's Powder River Basin. The mines will be operated by Atlantic Richfield, Carter Oil, Kerr-McGee, and Wyodak Resources. Approval of the mines was held up by a federal court injunction stemming from a lawsuit by the Sierra Club.

DIG IT — OR TAPE IT. A government official recently told a group of New York businessmen that a matter for debate on future energy sources is whether to "dig up the West or tape it over with solar panels." Frank W. Fri, deputy administrator of the Energy Research and Development Administration, said harnessing the sun would take time and money, and coal is the only mid-term energy supplement seriously considered, according to a story by United Press International.

SAFE POWER INITIATIVE. Coloradoans for Safe Power have collected 80,000 signatures, more than enough to put a nuclear power plant safeguards question on the November ballot. The proposed constitutional amendment would require two-thirds approval of the General Assembly before the construction of a nuclear power plant in the state. The amendment would do away with federally imposed limits on nuclear accident liability and hold the plant owners legally and financially responsible for the full cost. Demonstration of a method of safe disposal of wastes would also be required. A similar petition drive called the safe nuclear power initiative will begin in March in North Dakota.

PAWNEE PLANT APPROVED. The Colorado Air Pollution Control Division has issued a permit for Colorado Public Service Co. (PSC) to construct the Pawnee power plant, but with a condition PSC may find unacceptable. The proposed 500 megawatt coal-fired unit near Brush, Colo., must shut down and install pollution control equipment if it violates state air standards, according to the permit. PSC says it won't violate state standards, but may appeal the condition. A group of local farmers called "Information, Please" is opposing the plant because it is planned for prime agricultural land. The plant will burn Wyoming low-sulfur coal, and no sulfur scrubbers are planned. PSC has plans for a second 500 megawatt unit at the same site.

Wyoming may raise coal tax—a little

Wyoming's legislators, who meet for a shorter period than any others in the West, are scrambling to pass legislation to ease impact from impending energy development. This legislative session is 20 days long and intended only for budgetary matters. While most of the legislators professed an interest in adhering strictly to that policy when they arrived in Cheyenne, they were greeted with several "emergency problems" — many of them related to preparing for impact — and agreed to at least consider some of them.

The **Casper Star-Tribune** sensed the mood on the first day, saying editorially, "Thus, this budget session of the legislature is possibly the most critical facing this state as it plateaus momentarily during the winter months for the obviously immense industrial impact that will be hitting many sections of Wyoming beginning this spring and summer."

State staff members described to the legislators communities which are already faced with this "immense impact." Lawmakers are consequently voting for measures increasing loans, distributing federal coal royalties, and increasing slightly coal severance taxes.

Legislators were not in the mood, however, to consider an export policy on coal to avoid the impact. The Powder River Basin Resource Council and the Wyoming Outdoor Council proposed a resolution which would have given state agencies the power to deny permits to companies which ship 75% of their power out of state.

The bill came seven votes short in the House of the two-thirds majority needed to consider non-budgetary bills.

Legislators remained tight-fisted on budgets for state agencies dealing with the impact, including the Department of Environmental Quality, the Land Use Planning Office, and the Industrial Siting Administration. University and community colleges are't going to get money for capital improvements from coal taxes. Bills designed to give coal revenues to the higher education facilities were killed after publicity tying the bills to a controversial athletic facility at the University of Wyoming. No money actually could have gone to the facility without additional action by the legislature.

COAL TAX

The Wyoming House has given final approval to a bill allowing the citizens of the state to vote on increasing the tax on coal. The proposed constitutional amendment could raise the total state tax on coal from 10.7% to 15%, with all of the increase going into the permanent mineral trust fund.

As approved, the amendment would provide for allowing a tax of not less than two per cent and not more than five per cent for the mineral fund. If the voters approved the amendment, the legislature would set the actual tax.

The Senate still must vote on the measure.

The sponsor of the bill, Rep. Alan Simpson, said the tax could raise enough money in interest alone to fund state government at its current level without any other taxes, according to the Associated Press. He said that although the constitution specifies the fund is "inviolate," the money can be invested. It would be up to the legislature to decide how to invest the money, including any loans made to political subdivisions for developments, according to the Associated Press.

Rep. Nels Smith suggested the tax should be set by state law rather than by constitutional amendment, but his suggestion was not acted on.

The House also agreed to increase the lending authority for joint powers loans from $20 million to $30 million before 1977 and to $40 million after that time. Rep. Smith, sponsor of the bill, told **HCN** that the Farm Loan Board had already received requests from impacted communities for $1.3 million more than it now is authorized to loan.

ROYALTIES ALLOCATION

Federal coal royalties will also be sent to impacted communities if a bill passed by the Wyoming Senate is also passed by the House. The bill is designed to allocate the increased royalties which will be coming into the state if President Gerald R. Ford signs the federal leasing bill, now in conference committee.

The Wyoming Senate proposes that 20% of the increase would go to community colleges, 20% to the state highway fund, and the balance to the Farm Loan Board for local planning grants and construction loans to impact areas.

COLLEEN KELLY. Kelly was selected as the new director of the Wyoming Outdoor Council. A native of Wyoming, she has worked with the council for several years, including five years of environmental lobbying.

Idaho

House, Senate defy Governor Andrus

Land use legislation is taking a strange twist in Idaho. In most other states the land use debate has focused on whether decisions should be made at the state or local level. In Idaho, Gov. Cecil Andrus and conservation groups are pushing for local control, almost no one is asking for state control, and the legislature is working toward exempting private land from any controls.

Gary Haden, a columnist for the **Idaho State Journal** in Pocatello writes, "The land use bills submitted this year would do little to mitigate the way land is being chopped up, ravaged, and ruined."

The governor's land use package of three bills, designed to complement last year's local planning act, is being vigorously attacked in both houses of the legislature. Survival of any of the bills looks dim. The Idaho Conservation League (ICL) calls the Andrus bills "rather mild" but is supporting them as priority legislation. The bills would allow local governments to define subdivisions, require regional hearings (no state action) on developments of regional significance, and offer state planning assistance to local planning boards who request it.

POLITICS V. IDEALISM

Haden, in his **Journal** column, blasts the ICL and others for rallying behind Andrus' bills which he says "aren't worth the acrimony they generate in the legislature."

"The ready-to-heel environmentalists... have been taken in by the rhetoric of local planning," he charges. "...The land abuses we face today result, almost without exception, because the local power structure has had its way at the expense of the general populace."

But while conservation-minded citizens argue about the need for political realism v. idealism in regard to the Andrus bills, the legislature is taking a land use approach that could gut last year's land use bill and bring planning at any level to a screeching halt.

Anti-land-use-planning bills have been introduced in both houses and are progressing much more smoothly than the ill-fated Andrus bills. ICL says the bills would "set Idaho back 60 years and wipe out effective zoning and planning of any kind."

H.B. 389, which has already passed the House, says no land can be included within a land use plan without the consent of the landowner. "This would mean no land use regulation," said an **Idaho Statesman** editorial. "In essence it would repeal local land use regulation."

Meanwhile, the Senate is considering bills to require popular votes on most local land use decisions including the adoption of comprehensive plans. Other Senate bills would require that compensation be paid whenever land is diminished in value because of planning.

In related action, the Joint Finance-Appropriations Committee reduced Gov. Andrus' request for $171,600 for planning to $41,700. The $130,000 cut would have provided funds to loial governments for planning.

SOLAR ENERGY BILLS

Other conservation issues in the Idaho legislature include:

—The House has passed a bill to give an income tax deduction for the cost of installing heating systems which do not use electricity or fossil fuels. In Idaho, solar, wind, and geothermal power are available alternatives. Improving home insulation would also qualify for a deduction.

The House defeated a similar measure which would have allowed a property tax break for individuals who install alternative energy equipment.

—The Idaho Nuclear Energy Commission has been voted out of existence — at least temporarily. The Joint Finance-Appropriations Committee voted 10-5 to give no appropriations to the commission next year. Gov. Andrus had requested $183,100.

The commission conducts research on nuclear methods concerning "agriculture, forestry, mining, and industrial expansion."

—Gov. Andrus' proposal to establish an energy planning and conservation office appears dead for the session.

—The minimum stream flow issue has divided the legislature into three camps. Some want minimum flows for all Idaho rivers, some want minimum flows only in rivers north of the Salmon River, and some don't want to see any minimum flow regulations anywhere in the state.

Nebraska

Committee kills slurry pipeline

The Nebraska legislature killed a bill in committee which would have given the power of eminent domain to coal slurry pipelines crossing the state. This action represents a defeat for Energy Transportation Systems, Inc. (ETSI) which is planning a Wyoming-to-Arkansas slurry line that would cross Nebraska.

ETSI needs the power of eminent domain partially because its slurry line would cross several railroads. The railroads won't grant ETSI a right-of-way because its slurry line would take coal hauling business away from trains.

ETSI still has hope that it can put the slurry line in. A bill is in the U.S. Congress which would give slurry lines eminent domain. Also, ETSI could by-pass Nebraska and go through Colorado and Kansas. The Kansas legislature is considering a slurry pipeline bill this session similar to the one defeated in Nebraska. The Colorado attorney general's office is reviewing existing state statutes to see whether or not slurry lines already have eminent domain power in Colorado. If not, separate legislation would be needed.

There is talk of reviving the slurry pipeline bill in the Nebraska legislature, but former Nebraska Gov. Robert Crosby, now a lobbyist for ETSI, says his firm will go through Colorado and by-pass Nebraska.

Transpark road go-ahead appealed

Opponents of a "transpark" road through Bighorn Canyon National Recreation Area in Wyoming and Montana have appealed a recent court decision to the Ninth Circuit Court in San Francisco. They took the case to a higher court after a U.S. district judge lifted an injunction which halted construction of a nine-mile stretch of the highway.

Altitude foils converter, spoils Denver

Apparently because of the high altitude, cars in Denver equipped with catalytic converters can't meet federal emission standards, says a state air pollution control official. Air quality officials can't take action to stop the polluting cars, however. Under the federal Clean Air Act, cars must be certified before they are sold. At their point of manufacture, which is at sea level, the cars were able to meet the standards. Starting in 1977, the standards will have to be met at the point of sale.

Kellogg pollution creates emergency

Health officials in Idaho warned schools to keep children from playing outdoors and advised residents of Kellogg to avoid strenuous outdoor activity last week when sulfur dioxide emissions from a lead smelter reached emergency levels. Bunker Hill Co. shut down its smelter operation to get levels back down. Bunker Hill has been fighting a continuous battle with the state and with the Environmental Protection Agency over air pollution controls.

Nevada BLM wants to give range rest

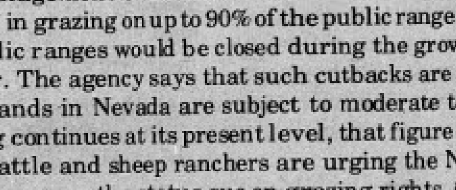
Bureau of Land Management officials in Nevada have announced plans to make controversial cutbacks in grazing on up to 90% of the public range land they administer. Under their plan, public ranges would be closed during the growing season for two to four months each year. The agency says that such cutbacks are necessary because an estimated 37% of its lands in Nevada are subject to moderate to severe erosion from overgrazing. If grazing continues at its present level, that figure could increase to 53% by 1990, BLM says. Cattle and sheep ranchers are urging the Nevada Congressional delegation to work to preserve the status quo on grazing rights, says the Sierra Club's National News Report.

Andrus asks for phosphate mine delay

Idaho Gov. Cecil D. Andrus has asked for a delay of up to two years on the completion of a federal environmental impact statement on phosphate mining in Southeast Idaho. Andrus cited a state report about shortages of data on weather and surface and underground water systems as the reason for the proposed delay. Idaho's phosphate mining area "is going to be the biggest mining industry the Northwest has ever experienced," says Dr. Maynard Miller, dean of the University of Idaho's College of Mines. Eight companies have proposed 16 new phosphate mines in the state.

Dams near Dinosaur Monument sought

The Colorado River Water Conservation District has shown definite interest in building two dams on the Yampa River upstream from Dinosaur National Monument in Colorado. The district has applied to the Federal Power Commission to gain permission to study the feasibility of dams at Juniper Springs and Cross Mountain Gorge. Already lined up in opposition to the project are the superintendent of the monument, C. D. Lewis, Jr., and the American Rivers Conservation Council. Lewis says the small power output expected from the dams — about 26 megawatts — would not be important enough to justify the project's adverse impacts to endangered fish, wilderness and wild river proposals, and whitewater boating. The rivers council has filed as an intervenor in the FPC application proceedings.



Eagles Nest Wilderness vote soon

The House Interior Committee will next week be considering the bill to designate an Eagles Nest Wilderness area in Colorado (HR 3863). Committee action is expected March 2 or 3, according to Salley Ranney of the Wilderness Society. The original bill called for 135,870 acres, but it was amended by Rep. Sam Steiger (R-Ariz.) to delete over 6,000 acres. In addition, the Denver Water Board is lobbying to trim an additional 11,000 acres to allow construction of the Eagle-Piney and East Gore Canal water development projects. The projects would direct water for storage in the Two Forks Dam. Ranney says the diversion projects would encourage additional front range growth. Conservationists have fought for the wilderness area for 10 years. Anyone interested in the proposed wilderness could write Rep. James P. Johnson (R-Colo.), sponsor of the bill, at the House Office Bldg., Washington, D.C. 20515. For more information, call or write Ted Tomasi at the Colorado Open Space Council Wilderness Workshop, 1325 Delaware, Denver, CO 80204.

Photo of Sand Dunes National Monument near Alamosa, Colo.

SIX PARK WILDERNESSES PROPOSED
CONSERVATIONISTS DISAPPOINTED BY SIZE

Early in February the House Interior Subcommittee on National Parks and Recreation approved wilderness proposals for six units of the National Park System. In Colorado the subcommittee approved for wilderness classification 11,180 acres of the Black Canyon of the Gunnison National Monument, 32,930 acres of the Great Sand Dunes National Monument, and 8,100 acres of Mesa Verde National Park. In New Mexico 22,727 acres of Bandelier National Monument were approved. In Arizona 9,440 acres of the Chiricahua National Monument and 71,000 acres of Saguaro National Monument were approved. According to Sierra Club Southwest representative John McComb, conservation groups were disappointed that in most cases the subcommittee chose to follow the administration's acreage recommendations. The conservationists' proposed acreage for Mesa Verde was cut by over two-thirds, for instance.

Montana burying valuable garbage

Montana produces some 500,000 tons of garbage per year. Of this, some 450,000 tons could be utilized for materials recovery and energy production, Barry Damschen, project engineer of the study of Montana solid waste possibilities told **Borrowed Times.** Over $3,000,000 worth of materials is buried in Montana every year when trash is disposed of, reports **BT.** Urban Montanans produce around seven pounds of trash per day, while rural Montanans produce about two pounds.

New budget feeds Garrison flames

The Ford Administration is "trying to extinguish the fires of Garrison controversy with gasoline," according to Richard Madson of the National Audubon Society. Madson was commenting on the Administration's proposed national budget which calls for an increased budget for the Garrison Diversion, a controversial water development project proposed in North Dakota to provide water for irrigation. (See **HCN, 3-1-74**) He said the Bureau of Reclamation is delaying release of information needed to evaluate the project while the Administration is accelerating the rate of construction. This is in "apparent disregard for ongoing Congressional investigations," he said. Meanwhile, columnist Jack Anderson says that Rep. William Moorhead (D-Pa.) is alarmed about the possible international repercussions if the project proceeds. "It is difficult to understand," he wrote to Sec. Henry Kissinger, "how the United States can justify construction of a project which is certain to result in treaty violation," according to Anderson's column. The irrigation return flows might pollute two rivers which run into Canada.

Pressler proposes Missouri Compact

Rep. Larry Pressler of South Dakota is calling for a Missouri River Basin Compact to prevent the federal government from selling water or making other water decisions without consulting with the states and to prevent states from "raiding underground aquifers" of neighboring states. Pressler says his proposal was partially motivated by plans for a slurry pipeline in Wyoming which would use water from the Madison Formation. Another motivation for such a compact was a recent action of the Corps of Engineers. The Corps discharged a large amount of water down the Missouri River without consulting South Dakota and caused flood damage, he says. He suggests the compact could be as large as ten or as small as three states. While admitting that South Dakota might find itself outvoted by other states, he says it is essential to form such a compact to assure the state will be consulted on future water development issues.

Ann and Myron Sutton

A lifetime watching the wilderness

by Bruce Hamilton

Nothing new — the High Country has two new wilderness enthusiasts for residents. But these two — Ann and Myron Sutton — also happen to be among the world's experts on wild areas around the globe. The Suttons have studied hundreds of wilderness areas in nearly 40 countries. They have hiked, canoed, and scuba dived from the Tropic's coral reefs to the glaciers and mountain crags of the Far North.

The Suttons are students and teachers of the wilderness. They have spent their lives investigating the wonders of nature. They have also written dozens of articles and over 20 books on the wild outdoors including, **Wilderness Areas of North America, The American West, Yellowstone: A Century of the Wilderness Idea, The Secret Places, The Appalachian Trail, The Life of the Desert,** and most recently, **The Pacific Crest Trail: Escape to the Wilderness.** This winter the Suttons have been working on another book tentatively titled **The Seacoasts of America.**

Each book is more than just a travel guide — they are loving tributes to the land, calls for preservation and a land ethic. Margaret Murie, another author and life-long friend of the wilds, said in her review of **Wilderness Areas of North America:** "This is a mighty reference work, a storehouse for years to come. But it is much more, because it continually conveys in poignant prose the fundamental reasons why man needs to cherish what wilderness is left to him and by him."

The Suttons moved from the Washington, D.C., area to Laramie, Wyo., where they are teaching at the University of Wyoming. Myron, on loan from the National Park Service's Division of International Affairs, is now an associate professor in the university's recreation and park administration department. Myron teaches three courses: wilderness areas of North America, national parks of the world, and appreciation and interpretation of park and recreation areas.

This summer Myron will teach three two-week seminars on wilderness areas of North America at the University of Wyoming, Northern Arizona University in Flagstaff, and Oregon State University in Corvallis. Each seminar by Myron will be followed by field seminars in wilderness appreciation given by Ann.

LISTEN TO THE TOWHEE

Ann is a geologist by training and a native of Illinois. Myron is a native of Arizona and trained in botony. The couple started their writing careers while employed by the National Park Service in the Southwest.

While stationed at Montezuma Castle National Monument, the Suttons became intrigued by the strange forms of desert wildlife around them. To learn more about their wild neighbors, the Suttons did research and then wrote up their findings in a short popular article.

One article led to another. The first time they tried a book, the publisher returned their manuscript with a suggestion that they try writing children's books. This didn't daunt the Suttons — they took the publisher's advice and came out with a highly successful book for young adults, **Steller of the North.** The book is about the German-born naturalist Georg Wilhelm Steller, who studied Alaska on a Russian expedition and for whom Steller's jay is named.

Ann and Myron Sutton in Galapagos Islands National Park, Equador. Photo by Larry Sutton.

Besides keeping a watchful eye and taking photographs to illustrate their books, the Suttons tape record interviews, personal comments, and natural sounds along the way. "This keeps the experience fresher," explains Myron.

The Suttons' recordings — ranging from elk bugling to "the symphony of mudpot sounds in Yellowstone National Park" — are also used by the National Park Service in its radio series, "Secrets of the National Parks," and in their university lectures.

Myron describes how once he played a recording of a towhee for a class: "It wasn't much of a song — just a high pitched wheeze. But I slowed it down to one-half, then to one-fourth, and then to one-eighth the normal speed. It was an amazing experience — by chance we had dissected one of the miracles of nature."

Recounting this classroom experience makes Myron recall a friend from Columbia who told him, "When technology has shown us all it can, nature will go on demonstrating her marvels forever."

> **A NOTE OF THANKS**
>
> **Ann and Myron Sutton have donated the use of many of their black and white photos of North American wild areas to HCN. We are very grateful to the Suttons and hope all our readers enjoy their photography in future issues.**

FOLLOW THE UNDERDEVELOPED

In his job with the park service's international affairs division, Myron tries to spread the knowledge this country has learned from managing national parks for over a century. He says that since the Stockholm United Nations conference on the world environment there has been a fervent desire — almost a panic — exhibited by other countries which want to preserve their natural environments.

Myron says these countries want to learn from the U.S. how to set up a park system in a shortened period. "What has taken us 100 years they want to condense to five and avoid all the trials and errors that we have gone through," he says.

"As a result, the U.S. National Park Service has helped develop master plans for a great number of pieces of world heritage," he says. These range from Mount Kilimanjaro in Africa to the ancient city of Troy in Turkey.

The Suttons do not regard the U.S. wilderness and park system as a completed show piece for the world. On the contrary, says Myron, ". . . we really have only begun in wilderness preservation."

"We have at the moment about .5% of the land surface of the U.S. in the national wilderness preservation system," he explains. "All together there may be five per cent of our country set aside if you include all wild areas in forests, parks, and refuges. By contrast Botswana in Africa has set aside 17% for these purposes. New Zealand has set aside 10%, and Dahomey in Africa eight per cent. So in some respects we're very far behind."

The Suttons estimate that there are 1,300 national parks or their equivalents in over 100 countries. Of the world's 20 largest national parks, the U.S. doesn't have one on the list.

Other countries have different areas of emphasis in park management, so that now U.S. park managers need to import park knowledge just as they have been exporting it in the past, says Myron.

As examples, Myron says the Japanese excell in underwater parks, the Canadians excell in motion picture and booklet interpretation programs, and New Zealand excells in trail guides. Argentina is a leader in publishing ecological studies of its parks, and Spain uses computers to assess environmental impacts in its parks.

CLOSED FOR REPAIRS

One of the greatest challenges facing this country's parks and wildernesses is the people pressure problem, say the Suttons.

Myron recalls the situation in an Eastern state recently where a new park was opened up and within one year "it was so overwhelmed and overused that it had to be closed for repairs in September. This suggests that there are not enough other park areas in that locality to supply the public need."

Ann cites the case of overuse of Mount Whitney in California. Once this summit was the mecca for only a few hardy adventurers, but in 1973 some 15,700 people used the trail to the top. "Undoubtedly there needs to be more wilderness areas because many are already overcrowded and overused," she says.

HCN asked "Does the designation of a wild area as wilderness attract crowds, and if so, should we refrain from designating any more areas wilderness?"

Myron answered: "If the designation of an area as wilderness attracts a great number of people, then that should be a message to all persons concerned that we need even more wilderness."
more wilderness."

HCN asked: "Do books such as yours introduce people to little known wild areas and thereby invite overuse?"

Ann answered: "That's a tough one. You do have the possibility of opening people's eyes to areas they may have never known before. But I think knowledge of wild areas is unavoidable — it travels by word of mouth from friend to friend or by the printed word. If we didn't write it, someone else would. I think it's better to write a book that says how to protect and use the wilderness properly, than to have someone else write a book that doesn't even mention proper use."

In their introduction to **Wilderness Areas of North America** the Suttons write: "Nothing could be more vital . . . for the continued preservation of wild lands than widespread publicity and a continuing clamor by wilderness lovers to get in. If that does not occur, lawmakers could commit the land to other purposes, especially in the face of 'energy crises,' 'timber crises,' and 'land shortages.' The more attractive these wild lands appear to the general public, and the more visits that are made to them, the more it will be seen that they are receiving 'multiple use' of the highest order: hiking, camping, canoeing, inspiration, photography, fishing, and nature study. . . ."

If this is true, wilderness advocates can thank the Suttons for helping to raise an army of citizens who sense the value of the earth's wild places. As the Suttons say, "The problem now is caring for those areas."

Refuge abuses alleged: public hearings planned

During the period from 1942-50, grazing and haying on the J. Clark Salyer National Wildlife Refuge in North Dakota increased from 6,900 to 20,830 acres. During the same period the number of greater prairie chickens there decreased from 1,000 to zero.

"In the Gray's Lake (Idaho) Refuge last spring, two of the whooping crane chicks brought there in an experimental attempt to start a new flock of this endangered species were killed by being trampled by cattle," reports the National Audubon Society.

Audubon says it has "the uneasy feeling that the U.S. Fish and Wildlife Service (FWS) has forgotten the reason for which the national wildlife refuges were established. Their primary purpose is to protect and maintain the nation's wildlife resources, not to produce hay, beef, and fossil fuels, or to provide public campgrounds and picnic areas."

Ironically, this strong criticism of the Fish and Wildlife Service comes in the wake of a successful effort by conservation groups — including Audubon — to insure that the service had total management powers over all national wildlife refuges. Several months ago conservationists were urging Congress to pass legislation to kick the Bureau of Land Management (BLM) out of the refuges and let the wildlife experts in the service manage the areas. This clamor led to the passage of H.R. 5512 which is now awaiting the President's signature.

Conservationists still believe FWS can manage the areas better than BLM, but they aren't satisfied with the trend of management by either agency on the refuges. Most recently Audubon, the Sierra Club, and other groups called for an environmental review of the annual funding and planned reductions in operations on the refuges due to budget cuts. FWS has responded by preparing a draft environmental impact statement (EIS) on alternatives for future management of all 368 refuges which cover over 32 million acres.

The EIS considers six management alternatives ranging from reverting to a custodial or "mothball" status to seeking full funding and beginning new programs. The document also considers shifting first priority to management of endangered species, investigates the possibility of establishing a separate federal agency to manage refuges, and evaluates the effect of shifting management from FWS to other agencies or to the states.

A brief summary of the options presented in the EIS has been prepared by the Sierra Club's Conservation Department. For a copy write 530 Bush Street, San Francisco, Calif. 94108.

For a copy of the complete EIS write U.S. Fish and Wildlife Service, Division of Wildlife Refuges, Room 2343, Department of the Interior, 18th and C Streets, N.W., Washington, D.C. 20240 or any regional FWS office.

Hearings will be held in March on the EIS and the future of the refuges.

BULLETIN BOARD

LOONEY LIMERICKS
by Zane E. Cology

In Colorado, the land of much coal
There's talk about getting hot from old sol
If you're ready to dare
Buy solar software
But first open curtains and take in the dole.

ERDA CHIEF IN DENVER

Robert C. Seamans Jr., administrator of the Energy Research and Development Administration, will attend a public meeting on energy research and development in Denver on March 3-4. To participate, contact James R. Nicks, Denver Public Meeting Coordinator, Rocky Flats Area Office, ERDA, P.O. Box 928, Golden, Colo. 80401.

GLACIER SKI TOURS

Glacier National Park in Montana is sponsoring guided ski and snowshoe tours in the park this winter. There is also a self-guided ski nature trail in the park. For more information write Glacier National Park, West Glacier, Mont. 59936 or call park headquarters at (406) 888-5441.

WILDLIFE SHORT COURSE

Colorado State University and the Colorado Division of Wildlife are co-sponsoring the 12th annual short course in wildlife management in Fort Collins March 29-April 2. The course is designed for conservation commissioners and laymen. For more information contact Eugene Decker, Short Course Coordinator, Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, Colo. 80521 or call (303)491-5656. Enrollment is limited.

WILDERNESS OFFICE

The Wilderness Workshop of the Colorado Open Space Council has set up a western field office in Aspen to complement its Denver office. The Aspen office director is James M. Thomas and his address is Box 1732, Aspen, Colo. 81611.

SHAPE UTAH WATER PLAN

Utah water planning will be, in part, shaped by comments received on a report entitled "The State of Utah Water — 1975," state officials say. To obtain a copy write the Utah Division of Water Resources, State Capitol Building, Salt Lake City, Utah 84114.

GLACIER PLAN RELEASED

A draft management plan for Glacier National Park is now available. The document covers both short and long term management alternatives for the park. Comments are being accepted until March 15. Copies are available from the Superintendent, Glacier National Park, West Glacier, Mont. 59936.

COAL REPORTS

Thirty reports on Northern Great Plains coal development have been compiled by the Colorado State Library. For a free summary of the series write: Brenda Finkel, Room 820B, Building 67, Federal Center, Denver, Colo. 80225.

COAL MEET PROCEEDINGS

Proceedings of the Fort Union Coal Field Symposium held in Billings, Mont., in April 1975 are now available for $8.75. The five-volume set includes technical papers on reclamation, social impacts, environmental impacts, and related subjects dealing with coal development in the Northern Great Plains. To order a copy contact: Coal Symposium, Bookstore, Eastern Montana College, Billings, Mont. 59101.

SOLAR CATALOG

A catalog of solar heating and cooling products is now available. The document, compiled by the Energy Research and Development Administration (ERDA) with the Department of Housing and Urban Development, lists and describes over 100 complete systems, and over 300 subsystem products. Information in the catalog was provided by the manufacturers and has not been evaluated by ERDA for accuracy or reliability. The "Catalog on Solar Energy Heating and Cooling Products" (ERDA-75) may be ordered as document number 052-010-00470-1 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, at a cost of $3.80.

CULTURAL GUIDE

The Bureau of Land Management in Idaho has published an illustrated 56-page guide to the cultural values on public lands in the state. The guide covers historic and archeological resources on BLM lands. "Cultural Resource Management" is available for free from the Idaho State BLM office, Room 398, Federal Building, 550 West Fort St., P.O. Box 042, Boise, Idaho 83724.

NEW CONSERVATION DIRECTORY

The 21st edition of the Conservation Directory is now available from the National Wildlife Federation, 1412 16th St., N.W., Washington, D.C. 20036. The directory is valuable for anyone who ever wants to contact a U.S. Senator or Representative, a state or federal agency, or a citizen group in any state and has not been able to find an address or phone number. The directory lists 1,500 state and federal organizations and agencies and 8,500 individuals in the conservation-environmental field. It sells for the printing cost of $3 from National Wildlife Federation, 1412 16th St., N.W., Washington, D.C. 20036.

IN NEED OF REFUGE. Prairie chickens are among the wildlife that has suffered in the past by overgrazing and farming on the national wildlife refuges, according to the National Audubon Society. Hearings are being held next month to determine future management policies for the refuges.

Photo by Don Domenick and courtesy of the Colorado Division of Wildlife.

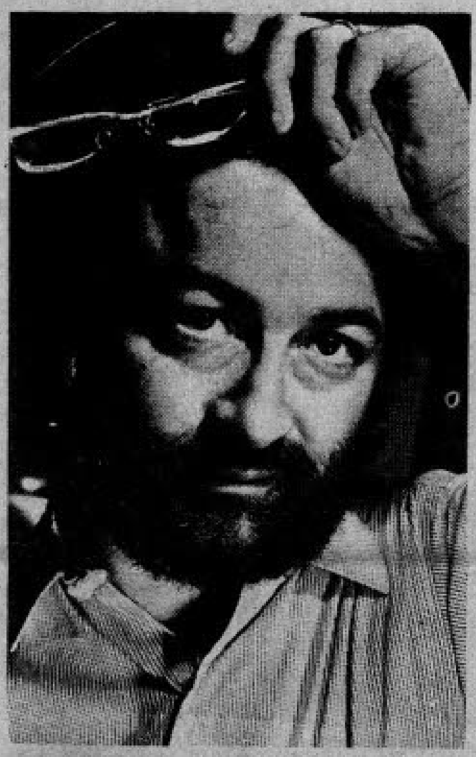
HCN Books

To Save a Bird in Peril

by David R. Zimmerman, Coward, McCann & Geoghegan, Inc., New York, N.Y., 1975. $9.95, hard cover, 261 pages, illustrated.

Review by Sarah Doll

Authors of the **Red Data Book,** a compilation of information on endangered species, estimate that 76% of the 94 species of birds that are known to have become extinct since the year 1600 did so because of human activity. Every species, including man himself, is doomed to extinction, but that we have hastened the demise of so



DAVID R. ZIMMERMAN. Photo by Henry Grossman.

many sometimes for no better reason than the sport of killing, nags our conscience, and motivates a few to try to reverse the trend. **To Save a Bird in Peril** documents the successes and failures of endangered bird guardians. It is a fascinating account.

They are fighting an uphill battle, one which is exceedingly complex. The birds themselves often present frustrations. Consider the Kirtland's warbler. Remaining numbers of this beautiful little songbird would fit into one large shopping bag. It has been facing intense competition from the cowbird, a parasite that lays its eggs in the nests of other species and lets the host brood the eggs and raise the chicks.

Many other species throw out the cowbird eggs, or abandon the nest and start over, but Kirtland's warbler cheerfully broods the eggs. They are larger than her own, which are shoved to the nest's cooler perimeter. If a warbler egg does hatch, the chick is often trampled by the larger cowbird chicks. Protecting the warbler, therefore, involved trapping and killing thousands of cowbirds in their nesting area. But even after this was done successfully for a couple of years, warbler populations continued to decline. The cause hasn't been proven, although some feel it's due to loss of habitat in their wintering grounds.

Government bureaucracy, not surprisingly, is another stumbling block. Raptorial populations (hawks, owls, eagles, falcons, vultures) declined with the increased use of DDT after World War II. The problem was identified in the 1950s; **Silent Spring** by Rachel Carson was published in 1962 pointing out harm done by pesticides; but a ban on DDT wasn't imposed until 1972. Even now, the ban can be lifted in some cases. DDT is still manufactured in the U.S. for export, and is still in the diets of coastal fish-eating birds.

The people involved in this struggle are, after all, human, and the same problems that hamper most human endeavors hamper theirs — pettiness, personality clashes, political infighting, competition for funds.

There is a deeper human conflict, also, between the preservationists, who feel the birds must not be handled by man in order to remain wild, and the propagationists, who feel man must take an active role in the birds' survival. The preservationists advocate habitat protection, which is undoubtedly vital, and nothing more. The propagationists are developing many techniques — captive breeding and reintroduction to the wild, double clutching (removal of the first set of eggs, thus stimulating the parents to produce another); use of foster parents, and artificial insemination, among others — which, although there have been setbacks, have on the whole had positive effects. Author David R. Zimmerman coolly presents arguments for both sides, as well as a thoughtful discussion of just what "wildness" is and why it is important.

Anyone interested in wildlife will gain insight from **To Save a Bird in Peril.** Zimmerman has researched his accounts carefully and presented a well-written narrative that can easily hold a reader's interest, through all 261 pages, in one sitting.

CONVINCING A FOSTER PARENT. College student Paul Spitzer of Old Lyme, Conn., brought healthy osprey eggs from elsewhere to replace infertile eggs of pesticide-burdened Long Island Sound osprey. Photo by Roger Peterson.

Points of Rebellion

Points of Rebellion, by William O. Douglas, Random House, New York, 1970. $3.22, hard cover, 97 pages.

Review by Myra Connell

In this very readable little book of less than 100 pages, William O. Douglas, recently retired Associate Justice of the U.S. Supreme Court, warns of inevitable revolution unless there is a response by the establishment in the shape of drastic social reform. Douglas calls the present-day establishment in the U.S. "the new George III."

He declares that picketing, marching, assembling in parks, and walking to state or federal capitols, are protected by the First Amendment, as modes of expression. While affluent members of society can utilize television or radio time for airing their views, most people cannot afford these means.

It has been customary practice of police to break up groups of minorities who are protesting in unorthodox ways, under the charge of "breach of peace" or "disorderly conduct." The real crime of the dissenters, says the former Justice, was that they were out of favor with the establishment.

Each statement reveals the insight, the intellectual power, compassionate nature, honesty, and high principles of the writer. Each succeeding argument stimulates the reader's mental processes.

Douglas sees the forces that produced the protests of the '60s and early '70s as unique in several ways. For example, the goal is not to destroy the regime, but to "make the existing system more human, to make the machine subservient to man."

Some pertinent points:

"The interests of the corporation state are to convert all the riches of the earth into dollars."

"The case against the University is that it is . . . a handmaiden . . . of the military-industrial complex."

"The dissent we witness is a reaffirmation of faith in man . . . a protest against the belittling of man . . ."

Douglas touches on widely separated problem areas: military preparedness, nuclear power, the death penalty, federal budget, national security, racial conflicts, oppression of the poor. He gives us some real "inside information" on the CIA, FBI, foreign policy, Vietnam, selective service, and other complexities.

Then he tackles pollution and destruction of the environment, making starkly brief statements such as ". . . it may not be long until there is not enough air for people to breathe."

Douglas is a true conservationist, with emphasis on conservation of the most valuable of resources, humanity.

His message is that all these problems, if left unsolved, will bring revolution. **Points of Rebellion** is somewhat revolutionary, itself, as well as provocative of that most painful of all processes, namely, thinking.

Douglas resigned his position in the U.S. Supreme Court a few months ago due to age and ill-health. He had served since 1939. Besides his work in the court, he has written 30 books.

Dear Friends,

The solar heating story in this issue was troublesome for us. Enthusiastic at first, we soon felt overwhelmed by propaganda. First we were told air collectors were best, then water. Some companies were proud of their plain black paint; another touted sophisticated selective coatings. Some said smaller collectors were enough; some laughed at that claim. We traveled from one company to another, each time in deeper confusion.

We began to realize that, although we may heartily support the concept of home heat from the sun — that is no reason to trust all those who sell sol[illegible] services. Obviously, these folks are [illegible] business for profit and have a health[illegible] interest in money — or in our case perhaps an interest in whatever free advertising they thought we might give them. Seasoning with the assignment, we put up our guard, argued, and tried to figure out the conflicting claims tied to technical knowledge and the wide fluctuations in price.

In short, it's a bit of a free-for-all out there. Most of these devices have scant history and the companies that sell them even less. Although some systems have been operating for quite some time, the oldest firm we interviewed has been in business for about 4½ years. There are no brand names to rely upon and very few people whom you can ask: "How do you like yours?"

We certainly do not suggest that you give up the search for a personal alternative to fossil fuel. We just want to emphasize that shopping for these contraptions should be more calculated than a grab for the cheapest apple at the supermarket, for instance. We suggest you make a hobby of it. Read all you can, arm yourself to the hilt with facts — and then go shopping.

For those who are interested, we [illegible] tend to help, of course. Next issue [illegible] present some advice from an indep[illegible]dent engineer and an architect about whether you should get a solar system now — or whether you should wait. We'll also try to outline the major issues clearly so you'll know what questions to ask when you're ready.

—the editors

In The News