Vermont Environmental Report

January/February 1984 — A Bimonthly Newsletter Published by the Vermont Natural Resources Council — Vol. 5 No. 1

Acid Rain '84

"Democracy in Action"

Kathleen Bond

It's democracy in action," said Canadian Minister of the environment Charles Caccia. He was referring to the "Acid Rain '84" conference held in Manchester, New Hampshire, the weekend of January 6-8, 1984. The conference brought together people from all parts of the U.S. and Canada to learn about causes and effects, control techniques and strategies for reducing acidic deposition.

Friends of the Earth Foundation and the New Hampshire Citizens' Task Force on Acid Rain organized the conference, which was cosponsored by 22 other organizations, including the Vermont Clean Air Coalition (of which VNRC is a member). The goals of the conference were to add impetus to the grassroots campaign against acid rain and to forcibly inject this critical environmental and economic problem into the politics of the presidential election, beginning with the New Hampshire primary. It succeeded in both cases.

"If the people lead, eventually the leaders will follow."

Over 600 people attended — twice as many as expected — and 150 reporters recorded the weekend activities on film and in print. Six Democratic presidential candidates delivered their positions on acid rain control.

President Reagan, Vice-president Bush, and EPA Administrator William Ruckelshaus all declined invitations to attend "Acid Rain '84." Reagan's position — or lack thereof — was an easy target for the Democratic presidential candidates who addressed the conference.

Former Vice-president Walter Mondale quipped, "President Reagan would rather take a polluter to lunch than take him to court." He calmly outlined his proposal for a national acid rain control fund to reduce SO_2 emmissions by 50% (the minimum reduction called for by the scientific community). Polluting states would pay a higher share under his plan.

Senator John Glenn of Ohio had the concerns of his coal mining constituency in mind when he introduced his own bill calling for the smallest emissions reductions of any of the candidates. He said his program has the best chance of winning Congressional approval because it would not cost a single job. It would reduce SO_2 emissions with scrubbers and other pollution control technology rather than requiring that industries switch to low-sulfur coal. It would be financed by a fee imposed on the sale of electricity produced by fossil fuel-burning plants, and utility customers would bear the cost according to their electrical use. Polluting states would not necessarily pay a higher share.

Senator Ernest Hollings opposes consumer user fees covering all the costs of emission reductions. He suggests private capital formation incentives (tax breaks for utilities which invest in pollution control devices). He supports a 50% SO_2 emission reduction and an innovative approach to reductions in S.1211, a bill requiring utility companies to mix natural gas with coal.

The self-proclaimed "common sense" platform of Senator Alan Cranston calles for reducing emissions by 50% by 1990 through more efficient use of electricity. He detailed three steps, any of which he says could achieve that objective:

(1) reasonable national energy efficiency standards for major appliances;

(2) capital incentives for industrial co-generation; and

(3) national electrical motor and lighting efficiency standards.

Cranston claims his platform would save huge amounts of electricity at a comparatively low cost and would create enough new jobs to offset any lost in the coal industry.

Senator Gary Hart proposed tax credits, loan guarantees, and other subsidies for Midwestern utilities to clean up their emissions. He is the primary Democratic cosponsor (along

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Closing the Loop

A three-year-long struggle to close the so-called "10-acre loophole" in Act 250 ended in victory Thursday, February 2, when the Vermont Senate approved a bill which eliminates an exemption from Act 250 scrutiny for large-lot developments.

WHOA!

Just as the VER was going to press, H.82, the 10-acre loophole bill, was tabled by the House Agriculture Committee in a parliamentary move designed to prod the Senate into quick action on H.94, which gives towns a "local review" option over single-lot subdivisions. **Call your representative!** Ask that H.82 be *untabled* and that the House concur with the Senate without delay!

A 1983 study by VNRC as well as earlier studies from Chittenden and Windham Counties confirmed reports that the loophole actually encouraged the conversion of farmland and forestland to residential and second-home development by creating lots that were larger than most homeowners needed or wanted, but too small to be profitably managed for agriculture or forestry.

Closing the 10-acre loophole has been one of VNRC's top legislative priorities since an Act 250 '10th Anniversary" conference in 1981 identified it as one of the principle weaknesses in the law. A bill to close the loophole passed the Vermont House 95-46 in January, 1982, but the Senate Agriculture Committee did not release the bill in time for full Senate approval.

It was back to the drawing board in January, 1983, with a new bill and a new legislature. With the backing of Governor Richard Snelling, the "10-acre loophole" bill won quick approval in the House only to be stopped in its tracks once again by the Senate Agriculture Committee.

Senator Gerald Morse, Chairman of the Senate Agriculture Committee, opposed the measure and was able to hang onto the bill until the second half of the 1983-1984 Biennium. The committee finally turned it loose in February, but tacked on eight amendments, any of which would have done more damage to Act 250 than would have been gained by closing the 10-acre loophole. The amendments ran the gamut from reducing the five-mile radius to a two-mile radius to depriving adjoining property owners of their right to party status at Act 250 hearings.

The bill came out on the floor of the Vermont Senate on Wednesday, February 1. The Senate debated the Agriculture Committee amendments for more than three hours before striking each one in separate roll call votes. Debate resumed Thursday morning on the substance of the bill, concluding with a dramatic 19-10 vote.

A committee of conference is being set up to deal with the date the bill becomes effective and the other differences between the Senate and House versions. The House version says it becomes effective upon passage, whereas the Senate version would give developers a five-month period of grace.

VNRC operations director Donald Hooper is cheered by the victory, but doesn't overestimate its consequences. ' It was an affirmation by the Senate of Vermont's basic commitment to environmental quality,' he said, "but it's ironic that it became so controversial, and that there was so much discussion of weakening the Act at a time when so many of our constituents are expressing their concerns and fears that Act 250 may not be strong enough to cope with incremental and mega-scale developments such as the destination-resort-style

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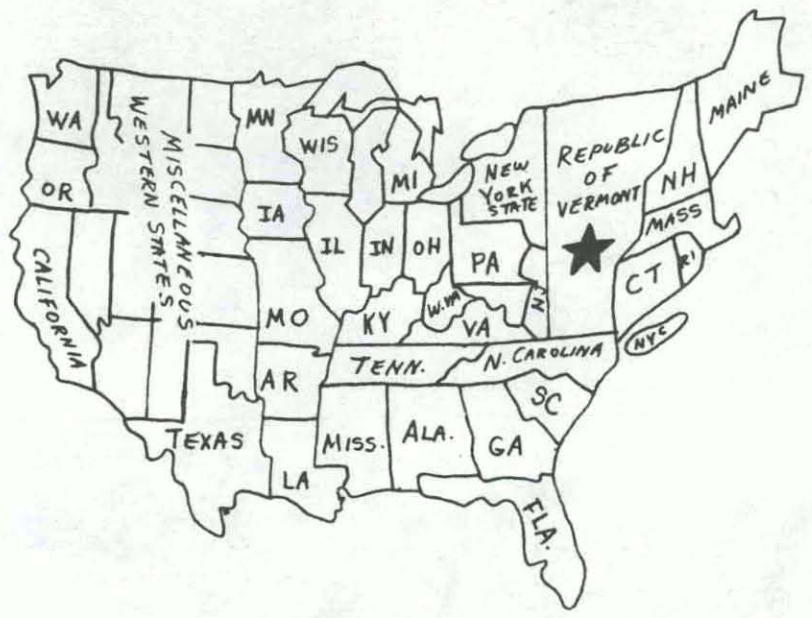


Vermont Perspective
Local and Regional News

Mixed Fare at Breakfast

Margy Erdmann

The Tavern Motor Inn in Montpelier was the setting for the Second Annual Legislative Breakfast on January 18, sponsored by the Vermont Environmental Caucus. Attendance by legislators was greater than expected, with 69 people jamming the breakfast room. Conversation was jovial, and the food was most palatable, but the message from key legislative committee chairmen was more difficult to swallow.

Senate Energy and Natural Resources Committee chairman John Howland and House Natural Resources Committee chairman Henry Carse agreed that environmental issues will be assuming a "back seat" this session. Howland further dampened morale when he announced that he could not support H.82, the bill that would eliminate the so-called "10-acre loophole.'

Nevertheless, the breakfast served as a forum for communication between those on both sides of the State House walls, and legislators went away with a better sense of which bills would and would not see forward progress this session.

The Council is monitoring more than two dozen bills in the Vermont General Assembly including three important bills concerning Act 250.

Highest on VNRC's list is maintaining and strengthening the use value assessment (current use) program. Two bills to weaken or eliminate the program will see considerable committee debate in the next few weeks. Watch VNRC's legislative **Bulletins** for updates.

Margy Erdmann is a legislative liaison for the Vermont Natural Resources Council.

Vermonters in Washington

10 Vermonters appeared before a subcommittee of the Senate Agriculture Committee in Washington to voice their opinions about the Vermont wilderness bill (H.R.4198), which cleared the House of Representatives just before Congress recessed last November. The bill would designate approximately 41,000 acres of the Green Mountain National Forest as wilderness and reserve another 22,000 in national recreation area classification which allows snowmobiling and limited timber harvesting for wildlife management purposes.

Assistant Secretary of Agriculture John Crowell showed up to register the Reagan Administration's opposition to the bill, but the only Vermonter to oppose the bill was John McClaughry of Kirby, who complained that the federal government was unjustly taking away from Vermont its right to determine the management of a federal resource within its borders.

Wilderness supporters hope that the bill will emerge from committee by early March. When it does, it is a good bet that Vermont will possess more than twice the amount of Congressionally-designated wilderness it now has. SW

Loophole

(Continued from page 1)
expansions of the Stowe, Sugarbush Valley, Sherburne and Stratton Mountain Ski Areas."

Hooper credits the victory to "a full team effort" involving a coalition of environmental organizations and their grassroots lobbyists who called, wrote letters and buttonholed their legislators on this subject for three consecutive legislative sessions.

Hooper also said that the debate in the Senate was "the most thoughtful, considered discussion of an issue" that he had seen.MM

Hikers Object to Trail Relocation Plan

A proposed relocation of a portion of the Appalachian Trail (AT) near the Killington Ski Area continues to elicit concern from conservationists and hikers in Rutland County and elsewhere around the state. The National Park Service wants to move a 1.4-mile-long section of the trail to the ridge line of Killington and Little Killington Peaks.

This section of the AT traverses land owend by the Sherburne Corporation, owner of the Killington Ski Area. The National Park Service has negotiated a relocation easement with the Sherburne Corporation, but the terms of the easement provide that the trail could be crossed by up to eight 35-foot-wide ski trails and one 200-foot-wide chairlift. It also allows for warming huts, picnic tables and snow-making facilities within the trail corridor. Hikers contend that such intrusions would significantly decrease the quality of the hiking experience on this scenic segment of the Appalachian Trail.

Earlier this year, the National Park Service issued an Environmental Assessment on the relocation. The Vermont Group of the Sierra Club and other state and national environmental organizations have filed comments or requested the opportunity to do so. Trail proponents have asked NPS to comply fully with the requirements of the National Environmental Policy Act, to acquire additional protection for the AT by restricting ski area development, and to extend the comment period from February 3 to early March.

Copies of the Environmental Assessment may be obtained by writing:

Mr. David A. Richie
Appalachian Trail Project Office
National Park Service
Harpers Ferry, WV

Calendar

Thursday, February 16, 7:00 p.m.

Author and ethnographer **Howard Norman** delivers the first in a series of lectures sponsored by the Center for Northern Studies in Wolcott. Norman has spent 10 years collecting and translating oral narratives of the Swampy Cree of northern Manitoba. His lecture will draw on these narratives and on his personal experiences with the Cree. Call 888-4331 for reservations and directions.

Sunday-Friday, February 19-24
Sunday-Friday, Feb.26-March 2

Five-day winter adventure/challenge course for adults sponsored by Sterling College. Participants learn map and compass skills, fire and shelter building, snowshoeing and cross-country skiing and first-aid skills. Tuition: $250 ($100 for educators, teachers and counselors).

Saturday, February 25

The second in a series of **winter workshops** sponsored by the Vermont Natural Organic Farmers Association will be held at St. Peter's Parish Hall in Vergennes. The conference begins with a pancake breakfast at 8:30 and includes workshops on growing grains in Vermont, greenhouse gardening, diversified farm income, creative farm management and improving soil fertility. For information and registration, call Barbara Lytton at 759-2585.

Thursday, March 1, 7:00 p.m.

Sanford Sagalkin, an attorney for Alaska's Prudhoe Bay and North Slope will share his experiences in resolving conflicts between Native organizations, environmentalists, and the oil industry in the second in a series of lectures sponsored by the Center for Northern Studies in Wolcott, 888-4331.

Thursday, March 8, 7:00 p.m.

Dr. Tom Svensson is a cultural anthropologist from Norway specializing in the study of the Sami (Lapps) of Sweden and Norway. He'll discuss two major court cases to illustrate what happens when traditional cultures clash with the interests of modern societies in the third in a series of lectures on natural resource conflicts sponsored by the Center for Northern Studies in Wolcott.

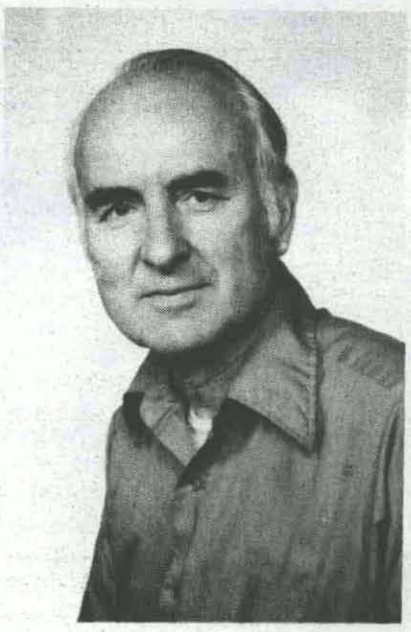
Thursday, March 15

Marianne Stenbaek is the featured speaker in the fourth in a series of lectures sponsored by the Center for Norther Studies. Stenbaek, a Professor of English at McGill University, has worked closely with the Inuit Circumpolar Conference, an international organization with representatives from Greenland, Alaska and Canada. For reservations and directions, call 888-4331.

Saturday-Sunday, March 17-18

Sixth Annual New England Environmental Conference at Tufts University in Medford, Massachusetts, sponsored by the Lincoln Filene Center for Citizenship and Public Affairs. As usual, the list of scheduled speakers is a regular ' Who's Who in the Environmental Movement," and cosponsors include virtually every significant environmental organization in New England. The conference includes two full days of workshops on more than 50 environmental and organizational issues and strategies. The conference registration fee of $55 covers two buffet luncheons and all workshops and materials. For information on registration and carpooling, call Kathy Bond at VNRC, 223-2328.

Resource People



Q: *What's done more for forest management than the chainsaw?*

A: (a) The current use program
(b) James E. Wilkinson
(c) Both of the Above

Jim Wilkinson is the champion and chief defender of current use, the program that allows Vermont farmland and forestland to be taxed on the basis of productive value rather than development value. He was instrumental in putting together the coalition that helped get the bill through both houses of the Vermont Legislature five years ago. Today, he's back in the halls of the State House again as the chairman and legislative spokesman for the Vermont Current Use Tax Coalition, a new organization that's trying to fend off a drive to eliminate current use or raid its budget.

Current use has been lauded as reasonable and quietly effective in protecting Vermont's productive farmland and forestland. The same description might apply to Wilkinson himself.

"He's probably contributed more to common-sense land management than just about anybody I know," says VNRC operations director Don Hooper.

One reason legislators listen to Jim Wilkinson is that he's a professional forester with more than 38 years of experience, including 33 years with the Vermont Department of Forests and Parks. Beginning as a district forester in charge of fire control for southern Vermont in 1946, Wilkinson worked his way up to county forester, district forester, and state forester, and retired as commissioner of Forests and Parks in 1979.

"As a forester, I recognize that taxes on the land in many cases are more than the value of the annual growth," says Wilkinson. "So there's really no incentive to hold on to the land and to manage it for timber-growing purposes."

Forest products is one of Vermont's major industries, yet every survey shows that Vermont's forests are not nearly as productive as they could be. According to Wilkinson, "One of the reasons for this is the low level of timber management in the past."

The current use program gives farm and forest landowners a break on their taxes in exchange for an agreement to keep the land in production. Timberland owners must have approved forest management plans in order to remain eligible for use value assessment.

Some legislators charge that current use is a windfall for land speculators and large corporations and that most of the benefits of the program go to people who don't need the subsidy. Jim Wilkinson sees it differently:

"The wood-using industry is dependent on a productive land base to provide raw materials," he says. "It's important for the state's economy and for the public benefit that they be assured some kind of basic resource. That's the real reason and justification for a law such as this. It's not to benefit you or me or anyone else; it's in the public interest to have productive farmland and productive forestland, rather than to have it broken up and split up to the point where it becomes a commodity rather than an active producing resource."

Of course, current use isn't Jim Wilkinson's only issue. He has provided invaluable assistance to VNRC as a sounding board and walking reference library on issues ranging from management of public lands to stream reclassification. He has testified on behalf of VNRC at countless public hearings and has been a faithful writer of articulate and persuasive letters to legislators, State officials, and the media.

In addition to serving as one of its principle volunteers, Wilkinson is a charter member of VNRC and has held the offices of director, treasurer and vice-chairman of the board of directors.

I asked Jim what kind of changes he's seen in his 20-year association with the Council:

"The organization has changed, the leadership has changed, but its basic principles remain the same. VNRC is made up of other organizations and individuals with a broad range of interests. Because most of the time it's been reasonable in the manner in which it has addressed issues, it's been able to maintain that base and to be effective in supporting a particular point of view." MM

Open Letter to the Secretary of the Vermont Agency of Transportation or

Road Salt Blues

Mr. Secretary, Mr. Secretary,
May I have your attention?
I have a small problem
I'd like to mention.
It's about my car —
A '71 Bug
Runs like a top
And works like a tug.
It came from Connecticut
Just three years ago,
Where it knew not
Salt nor ice nor snow.
Now instead of a Connecticut
Creampuff I've got
Just another old Volks
With body rot.

First some hubcaps,
A fender, and then a door,
And twice last summer
I fell through the floor.
The brake cable snapped
In mid-January
Now I stick out my foot
And say a "Hail Mary."
And just last week
Deepest despair!
I put the pedal to the metal
And the metal wasn't there!
The heater boxes melted
Long ago and
Not from overheating
Don't you know
That a Volkswagen has
A heart of gold
But without heater boxes
It's g%#$&#@ cold!
I've got fiberglass fenders,
A second-hand hood,
A new bumper made
Of nails and wood.
I've cornered the market
On furnace cement and tin
And I tell you, some days
I'm afraid to get in!
I have myself
A good mechanic.

He smiles and tells me
Not to panic.
Fred Kaiser's work
Is the best I've seen
But on my house
He has a lien.
And some parts even
Fred can't repair —
Especially when
The parts aren't there.
So it's off to Leo's
In Morrisville —
If Fred can't fix it,
Leo will.
Now at Leo's Welding
They have a flair
For rebuilding cars
Out of thin air.
I have enough work
To keep his whole crew busy
But when I get the bill
Oh, it makes me dizzy!

Now no one likes
To drive on snow. It's
Dangerous and destructive —
That I know.
But salt is an expensive
Item, too, and
More dangerous than snow
I submit to you.
In this day of budget
Deficit woes,
Perhaps we ought to
Try a lower dose. MM

Vermont Will Be Smallest State By Year 2000

According to the Census Bureau, Vermont will replace Alaska as the least populated state by the year 2000. The Bureau expects Vermont's population to increase from 511,500 in 1980 to 575,600 in 1990 to 625,000 in 2000. The Northeast as a whole is projected to lose population. Growth in the New England states will not be enough to offset the losses in the Middle Atlantic states, particularly New York.

— *from Vermont State Data Center News, October, 1983.*

VNRC

VERMONT ENVIRONMENTAL REPORT

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The Vermont Environmental Report is published six times a year by the Vermont Natural Resources Council. The opinions expressed by VER contributors are not necessarily those of VNRC. Please address all correspondence regarding this publication to VER Editor, VNRC, 7 Main Street, Montpelier, Vermont 05602, (802) 223-2328

COMMENTARY

Alternative Energies Have Been Oversold

Norman F. Smith

Among the proponents of alternate, or "soft," energies are some like myself who have taken these energy sources seriously enough to put them to use. I live, for example, in a passive solar home, burn wood, drive an energy-efficient car, and use sail power on the lake. People who have actually lived with these soft energies tend to have a cautiously hopeful, yet realistic, view of their uses and problems.

But there are many who vigorously promote the idea that these sources are free and plentiful and can readily replace present sources such as fossil fuels and nuclear power. Some environmentalists have developed a serious attachment to alternate energies out of a feeling that they will reduce the adverse environmental effects that have come to be associated with conventional energy sources.

Producers of conventional energy, on the other hand, have been reluctant to commit large efforts to the development of these new sources. Although they have been sharply criticized for this stand, it is now becoming clear that they are right. They have known all along that the soft energies have been greatly oversold and will not fulfill the glowing promises of their advocates. By applying a little scientific literacy plus some simple arithmetic, we can readily see why this is true.

Electricity From Solar Energy

Take solar energy, for example, which is perhaps the most passionately promoted — and the biggest disappointment — of the renewable energies. The radiant energy that comes from the sun is largely blocked by the earth's atmosphere; only about 1000 watts of power reaches each square yard of the earth's surface. That's enough power to supply five 200-watt reading lamps. That sounds like a useful amount, if we could gather it all and convert it to electricity. But doing so turns out to be very difficult.

First of all, solar (photovoltaic) cells can, at present, convert into electrical energy only 10-12% of the light energy that strikes them. Secondly, the sun is strong enough for use only six to eight hours per day. And thirdly, if clouds cover the sun at least half the time, as they do in Vermont, we can count on only three hours of sunshine per 24-hour day, on the average.

Putting all these numbers together, we find that to gather (and store for continuous use during dark periods) 1000 watts of electricity we would need about 80 square yards of solar cells. About 3600 square feet of cells (the roof area of a large house) would be needed to supply an average home with some 5000 watts of power.

Using these numbers and some more simple arithmetic, we can calculate that equalling the output of Vermont Yankee — a modest-sized plant of 540 megawatts capacity — would require some 13 square miles of solar cells! Even more land area would be needed for the machinery required to mount the solar arrays and to keep them pointed toward the sun.

There are huge obstacles in the way of creating solar arrays whose size is measured in square miles. There is at present no industry capable of manufacturing solar cells in such quantity. Also, high-purity silicon, currently the best material for solar cells, is one of the most energy-intensive materials in use today.

Other methods of producing electricity from solar energy — such as the "tower of power" system that employs mirrors to focus a large area of sunlight on a steam boiler mounted on a tower, have similar problems of size, land use, efficiency and cost.

Making electricity out of solar energy will never be easy, cheap, or environmentally benign. In fact, it may never be economical to make electricity from solar energy on a large scale. Breaking solar cell plants down into many residence units — even single residence units — is often mentioned. This approach will not reduce the area of cells needed, but will bring on the nightmare of maintaining hundreds or thousands of scattered individual units.

Conversion of various forms of energy into electrical energy is accomplished by different equipment and at different efficiencies.

Electricity From Wind Energy

Wind, like the sun, is variable and intermittent. It would take more than 600 large, complex and expensive wind turbines (capable of gathering 1000 horsepower each) operating full time to equal one Vermont Yankee. If the wind blows at a usable speed only, say, 20 percent of the time, we would need five times that many, or about 3000 turbines!

These wind turbines would need to be located in high places — preferably mountaintops — to capture the most wind possible. This would require access roads to each site for construction and maintenance, and power lines to carry the power to market. The environmental consequences for Vermont's beautiful, fragile mountain landscapes suggest that wind turbines in large numbers are unlikely to be found acceptable.

Ocean Thermal Energy

Ocean thermal energy (OTEC) is perhaps the most dramatic failure. The energy contained in the temperature difference between surface and deep layers of ocean water is even more diffuse and difficult to gather. A detailed design study by the Lockheed Corporation for the United States Department of Energy envisioned a floating power station weighing 300,000 tons (almost five times the weight of the largest superliner ever built). The station would need a pipe 125 feet in diameter to bring cold water from 200 feet below. The quantity of sea water needed by the station's heat exchangers would be equal to one fourth the average flow of the Mississippi River at New Orleans. 100,000 horsepower would be required to pump this water, for a net electrical output of only 160 megawatts. More than four such stations would be required to equal the output of Vermont Yankee! OTEC seems unlikely to provide us with any significant amount of energy.

The Immutable Laws Of Thermodynamics

The laws of thermodynamics in charge of energy conversions say that energy becomes less and less useful as it runs downhill, becomes more diffuse, or is represented by lower and lower temperatures. Equations based on these laws tell us that a steam plant can convert high-temperature heat (from the concentrated energy of fuel) into electricity with a theoretical efficiency of about 80%, while an OTEC plant can convert energy into electricity with an ideal efficiency of only about 7%. Actual efficiencies of operating power plants are no more than half these values — 40% and 3%, respectively.

Because the efficiency of an OTEC plant is a dozen times less than that of a plant using concentrated energy, the OTEC plant must process *a dozen times more raw energy* to generate the same amount of electricity. Such a plant must be something like a dozen times larger, and certainly more costly to build, maintain and operate.

Research may produce some modest technical improvements in the collection/conversion process within the limits imposed by these low efficiencies. But the size, complexity and cost of plants which produce electricity from solar, wind or ocean thermal energies will remain mind-boggling. The environmental effects of building and operating such plants are far more important than were originally imagined.

Other renewable sources such as geothermal, biomass, etc., remain limited in quantity and questionable in environmental effects. Hydropower is still one of the most desirable sources of electricity, but it is unfortunately limited by the number of available sites and by the amount of environmental impacts that we may wish to tolerate.

A Re-Examination Of Concentrated Energies

How does this bleak information on the future of "alternative" energies affect our search for future energy sources? All

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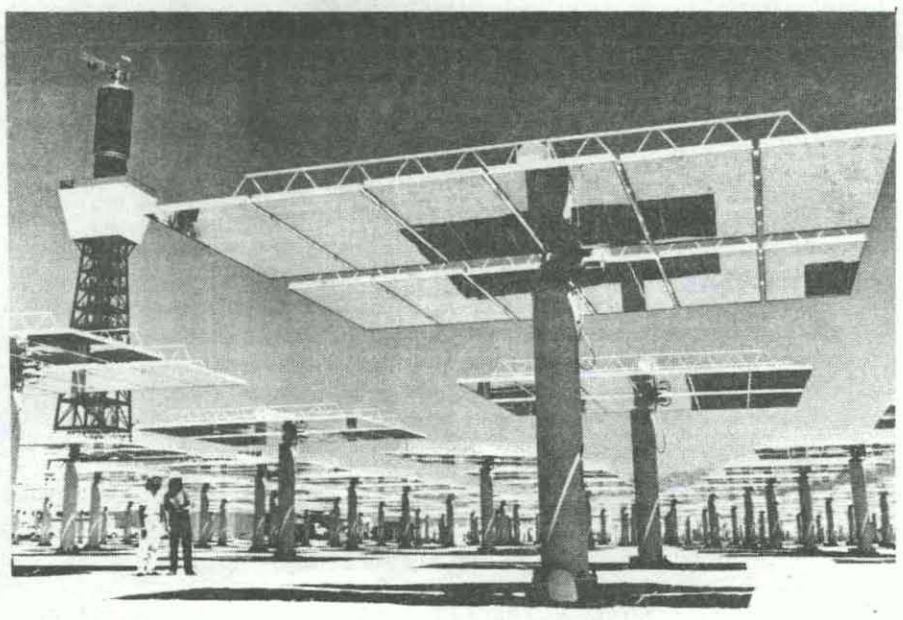
"The public [has] ignored the environmental problems of the soft energies...while focusing anxiously on a wholly inaccurate picture of the environmental aspects of nuclear power."



Over 1800 sun-tracking mirrors are designed to reflect heat to a 300-foot central tower containing a steam-turbine electric generator. This 130-acre site will produce 10 megawatts of electricity during peak daylight hours. (Photo courtesy of Cecil Riley, U.S. Department of Energy.

Alternative Energies

the pertinent studies that have been made of our energy future tell us that national and world-wide energy needs will continue to increase. We must use what renewables we can and plan to meet most of our needs with conventional energy sources. Unfortunately, all of these are in one kind of trouble or another, and we must examine them carefully.

Petroleum (oil and gas) is being consumed at a rate greater than the rate of discovery. Our present use of petroleum should be steadily reduced to decrease our dependence on foreign sources and then phased out entirely within a few decades as petroleum becomes too valuable for other uses to burn.

Coal is an indigenous resource available in large quantities, but is troublesome to mine, transport and burn. It is under increasing attack as a major cause of acid rain and other serious environmental problems. Improvements in the way coal is burned are mandatory.

Nuclear fuel is also an indigenous resource, but nuclear fission continues to stir doubts and anxieties in some quarters. Nuclear fusion still appears to be decades away.

The options open to us quickly narrow, as most studies have shown, to coal and nuclear power. From an environmental standpoint, a complete assessment of these two options must include careful comparisons between them.

The problems with coal may be somewhat ameliorated by anti-pollution efforts, but two inescapable problems remain. First, there is the so-called carbon dioxide problem that exists with any combustion process. An increasing amount of evidence suggests that the continued pollution of the atmosphere from carbon dioxide may cause serious serious atmospheric and climatic problems by the next century. This finding should be taken into account in our thinking about *all* combustible fuels, including coal, oil, wood and trash.

The second problem is the pollution from stack effluent and ash materials. No matter how much the stack gasses are filtered and scrubbed, an enormous amount of combustion products go directly into the atmosphere. Each year, millions of tons of ash containing a variety of toxic metals and compounds are removed from the furnaces of power plants. Because such prodigious quantities of waste cannot be contained or isolated, they are routinely disposed of in landfills. The toxic elements in the ash are not biodegradable, nor do they eventually decay to a harmless condition; they remain toxic indefinitely.

By contrast, the wastes from the nuclear fission process, though highly toxic, are very small in quantity. It has been said that if all our electricity were produced from nuclear power, the quantity of high-level wastes products per person per year would be no larger than a couple of aspirin tablets. Such a quantity is obviously small enough to permit complete isolation from the environment. In spite of claims to the contrary, the technology for doing this is available in the three-level protection of glassification, stainless steel containers, and long-term storage in deep, dry geologic formations. Eventually, of course, these wastes decay to the point where they are no more dangerous than the earth in which they are buried.

Conclusion

A prominent soft energy proponent declared at a meeting in the Vermont State House last year that with the sun and the wind and some hydro, we wouldn't need any thermal plants at all. Some renewable energy proponents have repeatedly declared that the renewable energies are free and readily available. The public in general (including some environmentalists) seems to have ignored the environmental problems of the soft energies and those of coal as well, while focusing anxiously on a wholly inaccurate picture of the environmental aspects of nuclear power.

A close look at the fundamental facts of science and technology suggests that these three positions are incorrect and archaic. It's time to set aside wishful thinking, romantic notions and unfounded fears, and make a careful, objective, unemotional reexamination of these issues. Our state and our nation will not be on the road toward either a secure energy future or an optimum environmental future until this is done.

Norman F. Smith is a member of the Vermont House of Representatives from Grand Isle County. A former aerospace research scientist, he is now a free-lance writer of science books. This article is based on his 13th book, Energy Isn't Easy, published in January, 1984, by Coward McCann.

Steps to a Recycling Society

Recycling has been an environmental goal for a decade, but only about one quarter of the world's paper, aluminum and steel is recovered for reuse, according to a recent study by Worldwatch Institute. "Materials Recycling: The Virtue of Necessity" (Worldwatch Paper No. 56) concludes that while voluntary recycling efforts have brought some success, countries that have increased materials recycling have been motivated primarily by short supply of raw materials, high energy and capital costs for processing materials, and high environmental costs in materials production and disposal.

Worldwatch lists three "Steps to a Recycling Society" that could double or triple materials recycling:

(1) Consumers must be required to pay the full costs of the materials they use. The world's forests are being cut faster then they are being replaced, which makes wood cheaper now at the expense of future generations. The U.S. Forest Service, which owns half the softwood timber in the United States, should consider reducing sales of trees for harvesting as long as waste paper is under-utilized. Also, a special effort should be made to reduce energy subsidies. When the price paid by industry for energy is distorted by subsidies, industries are less motivated to recycle.

(2) We must create world markets for scrap market, aluminum, iron and steel. Wealthy countries restrain the export of scrap iron and steel and seriously inhibit the use of imported scrap in developing industries.

(3) Greater collection of wastes will reduce environmental subsidies, promote international scrap trade, and soften the impact of higher energy prices. Container deposit legislation can dramatically increase the return of beverage containers. Incentives, information, or the threat of fines and non-collection of garbage can induce greater collection of recyclable materials.

Opinion

FEDERAL LANDS EYED FOR NUCLEAR WASTE DISPOSAL

The U.S. Department of Energy is scheduled to select two sites for high-level nuclear waste disposal by March, 1990. Speculation abounds that public opposition will force DOE to build the facilities on federally-owned lands.

"Most people simply don't want a repository in their backyard," said Thomas Cotton, a senior policy analyst with the U.S. Office of Technology Assessment in an article in the *Christian Science Monitor*. "The only places it sells easily is on government property."

Cartoon by Greg Watson

BookReview

The Country Journal Woodlot Primer

The Right Way to Manage Your Woodland

Richard M. Brett
(Country Journal, 1983,
$9.95

Richard M. Brett's *Country Journal Woodlot Primer* is billed as a handbook on small woodlot management. It does, in fact, contain much useful information on tool selection, tree planting, thinning and harvesting, and road and trail construction and maintenance. What I will remember about this book, however, is Brett's clear articulation of his personal land use ethic, and I'm sure that is what the author intended.

Dick Brett is one of the founding fathers of Vermont environmentalism. He presided over the birth of the Vermont Natural Resources Council and served as one of its first chairmen. A former book publisher and business manager of the New York Public Library, Brett turned to forestry at 50 years of age and graduated from the Yale School of Conservation and Forestry in 1955.

The Country Journal Woodlot Primer is an extension of Brett's work in both environmental education and forestry. It is a treatise on environmental ethics that almost incidentally concerns the care and feeding of small woodlots. Through a discussion of the principles of "right forest management," Brett drives home several cardinal tenets of modern environmentalism, namely, that everything is connected to everything else and that a woodlot (like any other natural system) is a complex whole that must be treated with intelligence, care and respect.

"In my work in forestry over thirty years, and in writing this book," says Brett, "I have been guided by the principle that a woodlot is much more than a site on which to grow trees that will be cut as soon as possible for man's use."

The most important thing that woodlots do, according to Brett, is not to provide lumber nor fuel nor "even! — to grow the trees that make the pulp that makes the paper that makes this book." Rather, a woodlot's most important function is "to provide pure water, and provide it in benign amounts." The author's elegant description of the role of forest soils in purifying water and controlling flooding could only have been written by a man who has spent much of his life in the woods and who identifies completely with the trees he tends.

Photo by Clare Brett Smith © 1983 Richard M. Brett

And speaking of forest soils, Brett contends that a woodlot's second most important product (after clean water) is soil. "From the soil's point of view, a forest exists to supply dead leaves, trees, and undergrowth to be turned into soil," he says. About two tons of bark, twigs,branches and trees fall on every acre of fully stocked forest every year. This material is attacked by rots, moulds, insects, rodents and "billions of microbes," which turn it into soil.

The Country Journal Woodlot Primer is not a guide to the scientific management of large commercial forests. It is geared to the owner of a small woodlot (10-200 acres) who is interested in management for wildlife habitat, recreation and simple beauty in addition to improved yield of forest products.

It is not surprising, then, that Brett's first chapter contains a firm denunciation of even-age monoculture. "Biologic diversity equals biologic strength," says Brett. "Where there is not diversity — the spruce-fir area of Maine, for example, — or where man has created a monoculture, there is a tasty banquet for enemies of the trees in monoculture."

Another of Brett's fundamental principles is that "there are no weed trees." Poplar can be sold for pulp or made into kindling and matches; hop hornbeam used to be called "leverwood" and is virtually impossible to break; wild apple trees provide food for deer and grouse. For the author, the challenge of making every product of the woodlot "find its use" is one of the joys of small woodlot management.

Brett has no love for chip-harvesters, clearcutting, even-age management or pesticides. "In the woodlot, the watchword is 'easy does it,'" he says. Brett cautions his readers to start small, use simple tools, and work slowly and carefully. He suggests that they take time out now and then to rest, reflect and "watch the geese flying south."

The meat of the book consists of two chapters entitled "Learning About a Woodlot," and "From Seedling to Harvest," in which Brett walks the reader through the process of mapping, marking and culling an existing woodlot and planting, pruning, thinning and harvesting new growth. Sandwiched between these chapters is a section on tool selection and use which is full of homegrown, field-tested advice and helpful illustrations.

Brett practices the same economy and simplicity in print that he promotes in the woods. His writing is spare, personable, and very, very lively. There's a nice mixture of the practical and the philosophical, with a dash of pure whimsy. Here's the author on some common — and uncommon — methods of getting wood out of the woods:

"My first venture in this field involved a metal, rubber-tired wheelbarrow. I pushed it into the woods, cut and bucked a tree into appropriate lengths for the stove, and trundled the load to the house. That is a hard way to keep warm, but it is possible, or it was in 1943. About the same time I used another method that involved slave labor, not my own. We had two attractive daughters. Young men flocked. In those far-off days, young men had to be polite to older men with talented daughters, so I invited them to manhandle short log lengths to the house where I would cut them into stovewood. Ropes and peaveys were the only available tools. I opine that this sort of exploitation is no longer possible, and in any case not every woodlot owner is blessed with beautiful offspring."

Brett devotes his final chapter to managing woodlots for "uneconomic" activities, such as wildlife habitat, recreation and aesthetic values. Many readers may wonder why a book on small woodlot management contains detailed directions for building wing dams and hiking shelters, but it's all part of Brett's conviction that a woodlot furnishes far more than "biomass."

"The beginnings of wisdon are often small, and one of them can be found right here, in our treatment of small woodlots," he says. "I can envision a mild, modest antidote to our global madness and waste if woodlot owners take up the idea that each one will spend some time improving his own corner. I find it heartening that, in doing so, we can make a small difference."

Dick Brett has gone a long way toward "improving his own corner" with this simple, thoughtful book on small woodlot management. MM

From the Front Office

A proposal for a VNRC-sponsored forest landowners' association requires further study. That was the consensus at a recent meeting of the Council's board of directors.

Last fall, the board accepted a recommendation from the forest policy task force that it seriously consider organizing one or more management and marketing cooperatives in conjunction with the Windham County Woodland Owners' Association. The impetus for this decision came from a report prepared by Sarah Thorne, a graduate student working in the Resource Policy Center at Dartmouth's Thayer School of Engineering.

Thorne wrote her master's thesis on "The Feasibility of Forest Landowners' Associations in Vermont," based on a detailed survey of forest landowners in Windham County. She concluded the "operating a forest landowners' association for education, management and marketing is feasible in Windham County, and probably in other regions of Vermont as well," and that such an association had great potential for "improving economies of scale in management, augmenting landowners' knowledge and *practicing* a land ethic."

Under-management of the state's many small woodlots and timber tracts is one of Vermont's most serious environmental problems, and the board remains convinced that forest cooperatives may be part of the solution. It is tempting to jump headlong into this project, but common sense suggests that VNRC should first make a calm and thorough assessment of the financial and political problems that may be encountered.

The board of directors has therefore stipulated that before deciding to pursue this effort, we should make a full-fledged feasibility study.

We estimate that such a study will cost between $10,000 and $15,000, and will require three months of full-time work for a consulting forester.

Anyone interested in this project should contact me. We'll need help rounding up the money, as well as the advice and support of Council members who are interested in improving the productivity of Vermont's forest lands. This is sure to be an exciting program that will benefit both the state's economy and the long-term health of its forest resource. I'll look forward to hearing from you.

Seward Weber
Executive Director

The Council

Notes from the Winter Board Meeting

VNRC, past and present, was the theme of the winter board meeting in Woodstock on January 26, 1984. The agenda included reports from the executive director, adoption of the 1984 budget, committee assignments (see listing at right) and presentations by special guests Richard Saudek, Vermont Public Service Department Commissioner, and Richard M. Brett, conservationist and charter member of VNRC.

VNRC executive director Seward Weber noted in his report that while the financial climate for the environmental movement -- including VNRC -- has not been favorable in recent years, there are opportunities to improve effectiveness through the establishment of an internship program that would involve graduate students from area universities and professional schools. The Council has used interns over the years, but this program would formalize and expand intern involvement in Council activities under the supervision of an internship coordinator and the operations director.

Weber also made a plea for strengthening the development committee and setting higher goals for it. He said that the two ingredients for a successful organization are program effectiveness and financial stability.

Operations director Donald Hooper discussed prospects for several key environmental bills. He expressed concern about the fate of the current use program and a bill to close the 10-acre exemption in Act 250. The Vermont wilderness bill was the subject of a hearing in the U.S. Senate on Wednesday, February 1. Seward Weber testified on behalf of the Council in support of the bill.

Board member William Uptegrove, an active member of the Vermont Wilderness Association, commended the Council for the work it has done in the last year or so to promote the Vermont wilderness bill. He said that every time he heard of a meeting or decision that promoted the cause of wilderness or brought the opposing factions together, it was clear that VNRC had played a major role.

The board approved the 1984 revenue and spending plan recommended by the executive committee. The plan calls for a barebones budget of $157,000 and contains no provisions for staff salary increases or capital expenditures. These might be possible later in the year if (and when) revenues exceed present expectations.

The board was treated to a delightful commentary by Richard M. Brett, a charter member of the Council and one of its first presidents. Brett spoke of the fundamental ecological realities to which society must adjust if it is to survive.

Richard Saudek, Commissioner of the Public Service Department, also spoke to the board. He addressed what he termed "the big picture' of electrical energy in Vermont's future. He said that despite considerable progress in energy conservation, electrical use continues to increase at a rate of between 2% and 4% per year. He spoke of the impending shutdown of Vermont Yankee and what that would do to electric rates in the state (the Vernon facility will be idled for 18 months next year for repairs). Saudek said that shutdown is a factor in the state's urgent efforts to negotiate a new intertie to Hydro Quebec at the Vermont-Canada border. SW

CHANGING OF THE GUARD

1984 marks the retirement of four directors who collectively gave 21 years of service to the Council. VNRC is fortunate to have had their unstinting support. **Edward W. Cronin, Jr.**, of Chester completed his six years of service with a year's term as chairman of the board of directors. **Patricia Highberg** of Woodstock, also a two-term member, served on the executive committee for several years as well as on the development committee. **Francis H. Whitcomb** of West Glover joined the board six years ago as the representative of the Vermont Sugar Makers' Association. His assignments included the executive committee and the employee benefits committee. **Elizabeth Titus** of South Shaftsbury served one term which included work on the information and education committee.

Several directors resigned during the year, including **Rebecca Davison** and **Robert Gillette** of Montpelier, **Robert Klein** of Chelsea and **Charles Ross** of Hinesburg.

VNRC is grateful to all these able volunteers for the support and energy they provided over the years. SW

New Members

VNRC is pleased to welcome the following new members, who joined us in November and December, 1983: Mary Lavigne; Jonathan Besse; Stephen Pratt; Kay Bergh; Robert and Martha Hoskins; Mr. and Mrs. Slade Hall; Elizabeth Edwards; Mrs. John J. Lindsay; John and Jules Kassel; Miss Yasmin Kassel; Rebecca Skillin; William Moore; Barbara Derick; The Cheneys; Frederick Lapham; Jean Arrowsmith; Stephen and Ellen Barker; John Distler; Miner Center Library; Carol Green; Lucia Milburn and William Glassley; Vergennes Union High School; Marion Driscoll; A. Wallace Bryce; Norm and Ann Bittermann; Charles and Carolyn Hogen; David Carpenter; Mike and Sarah Jane Higuera; Robert Cushman; Herbert Hillman; David Kraft; Kimberly Kraft; Maura Malone; Fred Risch; Julie Maddaloni; Corinne Manuel; Paul and Nancy Daniels; Mr. and Mrs. Leon Eldred; Pauline Dickinson; Gateway Motors, Inc.; Mary C. Heston; Virginia Strickland; Mr. and Mrs. Frederick West; Mr. and Mrs. Robert Franzoni; Marilyn Houghton; Robert S. Grogan; A. Russell Allan; James Lyman, Jr. H.M. Kruse; Mary DeVries; David and Frances Thomas; Kathleen Pominville; Arthur Cohn; Ken Libertoff; David Juaire; Scott Almdale; Jodi Levins; Esther Falk; Allison Deen; Eric and Lisa Mayer; Susan Roediger; Wilfred Roth; Mr. and Mrs. Hugh Bovingdon; Mr. and Mrs. John Nuber; Ronald Frascoia; Mrs. Ray Van Woert; Knight Funeral Homes; John E. Reighley; James Barton; Mr. and Mrs. Richard Bailey; Sherman White; Wesley Cilley; Freeman French; George and Roxane Blake; Doris, John, and Isaac Sage-Heine; Paul R. Lincoln; Coleman Asinof; Gerald Francis; Mr. and Mrs. Wendell Warren; Vermont Business Equipment; James Elrick; Brian Evans; H. Chandler Parker; Virginia Stambaugh; David Adsit; John McTernan; Woodstock Historical Society; Mr. and Mrs. Rolfe Chickering; Chris Rockwood; Helen Woods; Philip Fass; Laura Weed; A.W. Mosenthal; Mary Liss; Mrs. George Sawyer; Heather Skilling; W.E. Bermingham; Cleo Duprey; Alden Fiertz; Rev. Mary Clapp; Emily Joselson; Mr. and Mrs. Arnold Sharp, Jr.; Mrs. Edmund A. Brown; Susan Fleisher; George W. Smith, Jr.; John W. Hall; Steele T. Griswold; James Hayford; Margaret Arnold; Kate Lyon; Mr. and Mrs. James Owers; Henry Bourne; Dean and Anne Parker; Mrs. Lindsay Chandler; Lloyd Bowden; Dr. and Mrs. Theodore Brown; Joseph Johnson; Eleanor Cadbury; Dr. Charles L. Register; C. Wendell Carlson; Jerry Beacham Ins. Agency; Merrill Clark; Mr. and Mrs. Robert Marples; Karl and Nicole Pfister; Tepfer Family; Sue Sherwood; Burton Paquin; David Williams; Cushing Foss; Jay Joseph; Rev. and Mrs. Murdock Hale; Steven Robert Loveless; Mr. and Mrs. Nelson Manning; Ronald and Inga Spivak; Marguerite Impey; Andrew Bobkowicz.

FOR SALE:

VNRC is selling a serviceable dictating system consisting of three desk dictator-transcribers and two portable dictators. Made in Germany by Dejur-Grundig, these Stenarettes use magnetic tape rather than microsettes. Sale price: $100.00. Call Cherie Langer at 223-2328 if you would like a demonstration.

Dear VNRC,
Add this name to your list of new members!

_____

Address _____

_____

I enclose $_____ for the following type of membership: ( ) Individual -- $15.00 ( ) Family - $20.00 ( ) Student -- $5.00 ( ) Fixed or Limited Income -- $6.00 ( ) Business -- $25,00, $50.00 or $100.00 ( ) Sustaining -- $50.00 ( ) Supporting - $100.00

1984 VNRC COMMITTEE LIST

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Sarabelle Hitchner, Vice-chair
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Richard Mixer
Carl Reidel
Seward Weber, Secretary
Gail Osherenko

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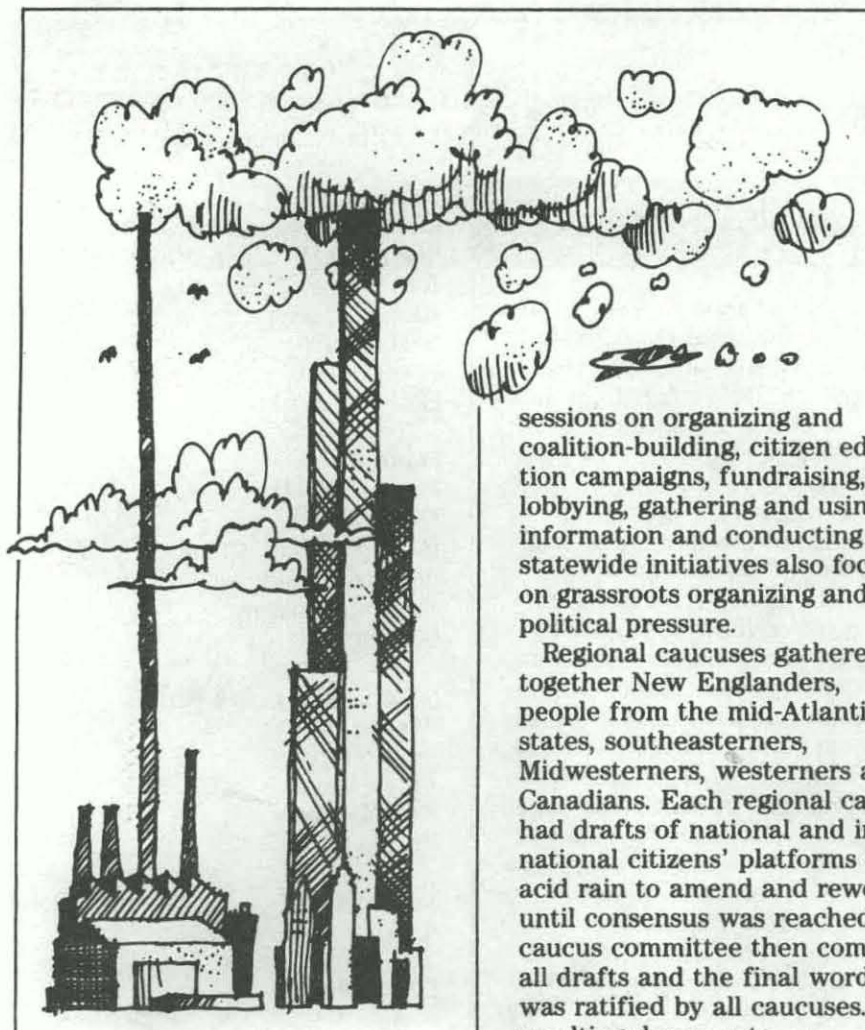

Democracy

(continued from page 1)

with Vermont's Republican Senator) of the Stafford-Hart bill, which is the strongest bill introduced in the Senate.

Reverend Jesse Jackson would impose a kilowatt-hour tax on all electrical generation, and a significant portion of the resulting superfund would be used to encourage conservation and development of safe and renewable energy sources. Major programs would be launched to rebuild and insulate homes, install solar heating devices, and, in general, reduce energy use and create jobs.

Rhetoric aside, these Democratic presidential candidates by their very presence acknowledged that the conference represented what Friends of the Earth President Rafe Pomerance called, "not just a citizen breeze, but a gale force of citizen pressure."

Conference participants learned how to translate popular sentiment into political pressure in workshops on the environment, health, economics, international relations, technology, jobs, cost allocation, and legislation — all conducted by experts in those fields. Skill sessions on organizing and coalition-building, citizen education campaigns, fundraising, lobbying, gathering and using information and conducting statewide initiatives also focused on grassroots organizing and political pressure.

Regional caucuses gathered together New Englanders, people from the mid-Atlantic states, southeasterners, Midwesterners, westerners and Canadians. Each regional caucus had drafts of national and international citizens' platforms on acid rain to amend and reword until consensus was reached. A caucus committee then compiled all drafts and the final wording was ratified by all caucuses. The resulting documents — a "National Citizens' Platform on Acid Rain" and a "U.S./Canada Citizens' Agreement" — are on their way to President Reagan and members of Congress.

New Englanders will also be rounding up support for a new acid rain bill, H.R. 4404, that was introduced in the House of Representatives in November. Dubbed the "New England" bill, it gathered immediate cosponsorship by all New England Representatives except Olympia Snow of Maine. It mandates the 12-million ton sulfur dioxide reduction that New England environmentalists have been calling for and is designed to be broken down into amendments to the Waxman bill, now the favorite of the House proposals. It authorizes a 1.5 mil per kilowatt-hour surcharge on all electricity bills to create a trust fund to pay for sulfur dioxide emission reductions.

In phase I, the fund would pay 90% of the costs of installing scrubbers in the 50 top polluting plants in the country. This approach would achieve significant reductions in a short period of time while avoiding sudden and massive unemployment in the high-sulfur coal mining states.

In phase II, a superfund would provide grants to states to help pay their clean-up costs. Each region of the country would contribute to the fund in proportion to its contribution to total emissions. New England contributes 6% of the total and would pay roughly 6% of the cost. Vermont, with its very low emissions, would pay almost nothing. Vermonters should write and thank Representative Jeffords for supporting this bill.

And speaking of letter writing, Priscilla Chapman, executive director of the New England Sierra Club, says our real job in New England is appealing to the rest of the country. She calls on us to write personal letters to at least five friends or relatives in states outside New England. Acid rain damage is occurring in many major sulfur-dioxide-emitting states, such as Pennsylvania, Michigan, Wisconsin and West Virginia. Yet many people still think of it as New England's problem.

Regional concerns do play a part in the kinds of citizen efforts that are mounted in different parts of the country, and they influence which legislation is supported. But solving the acid rain crisis requires a united national and even international effort. Adele Hurley of the Canadian Coalition on Acid Rain is encouraged by the fact that the issue has created a transboundary constituency. She remarked, "A tremendous network of citizen activists in the U.S. and Canada and Europe has evolved and these individuals are ahead of their governments in terms of the immediacy with which they want their governments to act."

Rafe Pomerance echoed Ms. Hurley. "If the people lead, eventually the leaders will follow," he challenged. He maintained that if the strong general public opposition indicated by most polls can be translated into political action, the war on acid rain can be won. "We're in the political process to stay, because that's how policy is made in a democratic government."

The New Hampshire Acid Rain Conference was more than a gathering of the troops for a pep talk before the next skirmish. It was a timely signal to the present administration and the future administration that the protection of clean air, healthy forests, fishable streams, and productive cropland translates into votes at the polls.

Priscilla Chapman summed it up in the recent issue of *New England Environmental News*:

"For the sake of our lakes and streams, our aquatic life, our forests, our buildings, our drinking water, and our health, we don't have a choice — we have to win this one."

Kathleen Bond is Communications Coordinator for the Vermont Natural Resources Council and was a VNRC delegate to the Acid Rain '84 conference.

PACs Pull the Strings

For a whole new perspective on Congress' recent track record on environmental protection, take a look at "Clean Air — Acid Rain: PAC Money in Congress," a January, 1984, report by Common Cause. The report defines political action committees (PACs) as "committees formed by corporations, trade associations, labor unions and other organizations to make contributions to federal candidates." Common Cause says the number of PACs has increased from 600 in 1974 to over 3400 in 1984, and the amount contributed by PACs to federal candidates has risen from $12.5 million to an estimated $100 million.

The two key committees with primary jurisdiction over the Clean Air Act in Congress are the Senate Environment and Public Works Committee and the House Energy and Commerce Committee. Over the past six years, members now serving on the Senate Environmental and Public Works Committee have received a total of $7,558,291 from PACs, only $20,848 of which came from environmental PACs. Contributions to current committee members from PACs of the seven key industries affected by the Clean Air Act totalled $1,551,516.

During the last election, members who now serve on the House Energy and Commerce Committee received a total of $4,378,121 from PACs. $735,315 came from PACs representing the seven key industries affected by the Clean Air Act, and $21,905 came from environmental PACs.

Vermont Environmental Report

Vermont Natural Resources Council

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January/February 1984