Vermont Environmental Report

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Wood Energy on Trial:

Tough Questions Raised at Hearings on Burlington's Wood-fired Power Plant

Three years ago, the Burlington Electric Department (B.E.D.) won national acclaim for its bold experiment with wood energy. In October, 1977, it converted a 10-megawatt unit at the Moran Station from coal to wood chips, and became the first utility in the nation to generate electricity by burning wood. About the same time, it unfolded plans to build a new 50-megawatt wood-fired plant to be called the Joseph C. McNeil Station. Together, the two plants would enable the city to meet one-third of its demand for electricity by burning wood.

Mother Jones called Burlington Electric *"the yardstick with which to measure all other utilities."*

More than a dozen newspapers and magazines applauded the Burlington experiment. *Mother Jones* called Burlington Electric "the yardstick with which to measure all other utilities." In January, 1978, Burlington voters approved, by a two-to-one margin, a bond issue to fund the McNeil Station, a small hydroelectric facility on the Winooski River, and a trash incinerator which would produce hot water heat.

But more recently, Winooski officials, federal agencies and local environmental groups have raised questions about the proposed wood plant. Some critics claim that the plant is unnecessary, uneconomical and that it will devastate the local environment.

"At Burlington's current rate of growth, it won't need the extra power from the McNeil Station until after the turn of the century!"

The most common criticism of the McNeil Station is that Burlington does not need the 50 megawatts of power that the plant will generate. Steve Lange spent two years researching the McNeil project. Says Lange, "according to its 1979 Annual Report, the Burlington Electric Department generates 58 megawatts of electricity at two local stations, and purchases another 45 megawatts from Vermont Yankee, PASNY, and other sources, for a total of 103 megawatts. Yet the city's peak demand for electricity is only 63 megawatts, leaving a safety margin of over 40 megawatts. At Burlington's current rate of growth (about one megawatt per year) it won't need the extra power from the McNeil Station until after the turn of the century!"

"No one claims that Burlington needs a 50-megawatt plant," says Bob Dakin, former Assistant Manager of the McNeil Project. Dakin maintains, however, that Burlington *does* need a new base-load power plant, and that "economies of scale" make a 50-megawatt plant more cost-efficient than a smaller one.

Dakin claims that no one can accurately predict Burlington's future electric needs. "It's a crystal ball," he says. Since the 1973 Arab oil embargo, the Queen City's electrical demand has grown at a mere 1 to 1½ per cent per year. But this may not be a long-term trend, since during the preceding decade (1963-1973), peak electrical demand nearly doubled.

Dakin also points out that "energy consumption may stabilize, but the form may change." Given the uncertainty of oil and gas supplies, many new home-builders are installing electric heat as either a primary or back-up unit.

Bob Young, B.E.D.'s General Manager, thinks that "even with no load growth, Burlington could be in trouble." Young is concerned about Burlington's dependence on "the other guy." The "other guy" includes nuclear power, which faces an uncertain future in the Northeast, and PASNY, which reduced the amount of power it would sell to Vermont by 1-2% when it renegotiated a portion of its contract with the Public Service Board last year. As for Hydro Quebec, Young objects to it because it is an "interruptible" source of power and because, like oil, its price and availability will be controlled by a foreign government. Young admits that electric rates will undoubtedly continue to rise, but he hopes to hold the line on price increases through local control.

David White, Codirector of the Vermont Public Interest Research Group, charges that the Burlington utility is underestimating the amount of power available to the city. B.E.D. figures do not include 6-10 megawatts of power which will be generated by the hydro facility at Winooski, nor do they take into account the growing popularity of wood heat, small solar units, and passive solar design.

He also thinks, unlike Young, that PASNY and Hydro Quebec could be reliable and inexpensive sources of power for the city of Burlington for many years to come. "The James Bay facility will produce 22,000 megawatts -- far more than Quebec can use -- and they have to rely on power sales outside of Canada to finance the project," says White. "And PASNY, as a federally-funded project, is required to sell a certain percentage of its power to neighboring states."

White believes Burlington's needs would be better served by a conscientious energy conservation program. Earlier this year, the Burlington Electric Department offered city voters a $1,500,000 program that included insulating residential hot water heaters and lowering their temperatures, installing flow restrictors on shower heads, requiring home energy audits, and installing "ripple control" devices which would enable the Department to selectively switch off residential hot water heaters to reduce peak demand. 65% of the electorate approved the plan, but since a 2/3 majority was required, it went down in defeat.

"The cost per kilowatt-hour of generating electricity is about five times the cost of conserving an equivalent amount of energy."

White charges that the B.E.D. "could have sold the program if it wanted to." He claims that the utility "vigorously undersold the program," in contrast to the wood chip plant, which was promoted through "an intensive public relations campaign." As Diane Geerken, Chairman of the Vermont Group of the Sierra Club points out, "the cost per kilowatt-hour of generating electricity is about five times the cost of conserving an equivalent amount of energy."

More important than "cost per kilowatt-hour" are questions about the environmental impact of the McNeil Station. Geerken is concerned that the McNeil proposal will not receive a thorough review under "Section 248," the law governing construction of new generation and transmission facilities. She says that only an Environmental Impact Statement (E.I.S.) will ensure that all the issues are considered.

An E.I.S. will only be required if the federal government becomes involved in the project, and at this point, federal intervention seems unlikely. Water quality does not appear to be an

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Wood Energy

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issue, and the plant will not need an air quality permit because it will not emit large enough quantities of carbon monoxide or particulants to fall under the provisions of the Clean Air Act as it applies to the city of Burlington.

The situation could change if the Environmental Protection Agency determines that the site of the plant -- Burlington's Intervale -- is a wetland. Last summer, E.P.A. officials toured the plant site and decided that it was not a wetland. But during a repeat visit this May, they found a variety of wetland plants, grasses and flowers in the area. (For a discussion of the geology, archaeology and plant and animal life of the Intervale, see the article by Gale Lawrence in the May/June VER.)

The plant's impact on Vermont's forests is near the top of everyone's list of environmental concerns. Both advocates and opponents of the McNeil plant agree that Vermont's forests, abundant as they are, suffer from poor managmment.

B.E.D. officials claim that the plant will actually benefit our forests because it will create a market for "rough and rotten" wood. This should help eliminate dead and diseased trees and make way for the growth of higher quality timber.

But Darby Bradley, Vice-chairman of the Forest Resource Advisory Council, thinks that B.E.D. officials have "oversold" this aspect of the plant. "Good forest management is not just a matter of 'weeding out' dead or diseased trees. It can include light or heavy thinning, clear-cutting, or even doing nothing for a while, depending on the condition of the trees."

The wood chip plant will burn between 500,000 and 800,000 tons (200,000 to 320,000 cords) of wood per year, and the demand for wood for private residential heating and other purposes will probably continue to grow. Without a comprehensive program for managing the forest resources of the State, it may be very difficult to protect them from over-cutting and nutrient depletion. (See *Report From: The Forest Resource Advisory Council* in this issue).

Among the most outspoken critics of the B.E.D. plant is the City of Winooski. Winooski has invested a great deal of money in a program of downtown revitalization including historic preservation, housing construction, creation of public parks and pedestrian walkways, replacement and repair of underground utilities, and a general refurbishing of the commercial district. City officials think the wood-chip plant will undermine their efforts.

If the McNeil Station is built, it will be located due west of Winooski. Transmission lines will pass through the city, and prevailing winds will carry smoke, ash and cinders from the wood plant. But local residents are most concerned about the increase in truck traffic. The most direct route from I-89 to the plant site is through downtown Winooski, via Exit 15. If the McNeil Station burns 500,000 tons of wood chips per year and operates 16 hours a day, a large truck will pass through downtown Winooski once every six minutes!

"No one would ask that those trucks be routed through Church Street," says Brendan Keleher, Deputy Director of Community Development for the City of Winooski. "The perception is that Winooski doesn't have a Church Street -- these are just roads over here." Even Bob Young, McNeil's most ardent advocate, concedes that traffic is a very serious problem. He hopes to negotiate an agreement with the Central Vermont Railroad to transport most of the wood by rail.

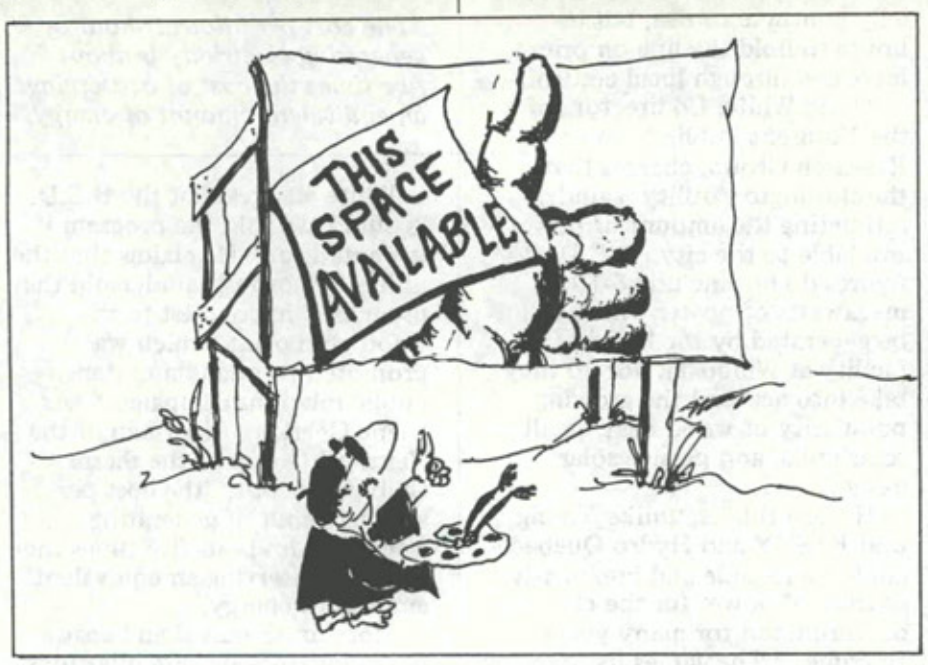
With respect to transportation, as with all other environmental questions about the 50-megawatt plant, Young feels that the Burlington Electric Department has left no stone unturned in its search for sound, sensible answers. "There's no way we can win," he shrugs. "Electric rates will go up if we build the plant, and they'll go up if we don't. But if we don't build it, we're going to have problems -- a crisis, in fact -- by the mid-1980's." "If they tell us not to build it," he adds, "I hope they tell us what the alternatives are." MM

"SECTION 248"

Before the McNeil Station can be built, it must receive a "certificate of public good" from the Public Service Board. The Burlington Electric Department must prove that the project will "promote the public good" according to the provisions of legislation known as "Section 248."

The Public Service Board will grant or deny a certificate based on evidence presented at public hearings, where interested citizens may comment, and at technical hearings where the parties to the case provide expert testimony on the advantages and disadvantages of the proposal.

VNRC has party status in the case and is represented by Staff Attorney Darby Bradley. Says Bradley, "VNRC has not taken a position for or against the plant, but we want to make sure that if the plant is built, wood harvesting will be conducted in a responsible manner."



THIS IS NOT A BILLBOARD! THIS IS AN INVITATION TO ENTER

VNRC's First Annual PHOTO/DRAWING CONTEST

If you have fine quality original black-and-white photos or pen-and-ink sketches of birds in flight, blooming buttercups, historic buildings, babbling brooks, majestic mountains, or other species native to the Vermont environment, or good examples of our failures to protect that environment, please send them to us. A panel of professional artists and photographers will judge them on the basis of visual appeal, originality, and how well they will reproduce in print. The winning entries will appear in the next six issues of the Vermont Environmental Report, and the winning artists/photographers will receive enough free copies of the VER for themselves, their mothers, and their personal portfolios.

Send your entries to VER Editor, VNRC, 7 Main Street, Montpelier, Vermont, 05602, by September 12, 1980. Please identify the subject of each photo or drawing you submit, and tell us your name and address and whether or not you want it back when we're done with it.

Calendar

August 17
Lake Champlain Islands Trust Annual Meeting on Providence Island from 12:00 to 4:00 p.m. Call Darby Bradley at VNRC, 223-2328, for information and reservations.

August 19
Public hearing to review final plans and specifications for the Georgia Whey Plant at 7:30 at the Georgia School. Cheryl King at 828-3361 will provide details.

August 20
"Islands of Lake Champlain: Gems in the Water," a slide show prepared by Cheryl King for the Lake Champlain Islands Trust will be shown at the Church Street Center in Burlington at 7:30 p.m. The show is a 25-minute presentation on the history, current uses and values and possible future of the 71 Lake Champlain islands. It can be booked, free of charge, through Monty Fischer at the Lake Champlain Basin Program, 951-6785 or 862-8270.

August 26
Public hearing on the Agency of Environmental Conservation's approval of a request by Juster Associates for an Air Quality Permit to build a shopping mall in Berlin. The hearing will begin at 1:00 p.m. at the Pavilion Auditorium in Montpelier.

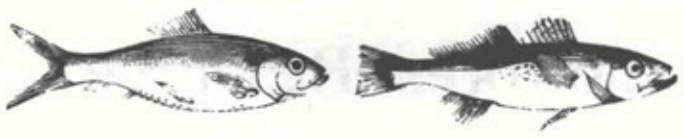
September 13
VNRC Annual Meeting at Shelburne Farms in Shelburne. There will be a Champlain Islands tour and field trips in the morning, followed by lunch and a business meeting. Barry Commoner will speak at 3:00 p.m. See the Council page for more information.

September 25 and 26
The New England River Basins Commission Quarterly Meeting at the Sheraton in Lebanon, New Hampshire, will include an all-day workshop on the environmental impacts of new hydro development. Call Monty Fischer at 862-8270 for more information.

Naturalist's Journal

Swimming Against the Current

Andy Stout



Imagine a river in New England where the clear waters are almost solid with shoals of Atlantic salmon struggling against the current! Such was the case in the late eighteenth century with Vermont's beautiful White River. The Atlantic salmon was once so numerous in the Connecticut River that farmers used to fertilize their fields with them. One night at Old Saybrook, Connecticut, two fishermen took 3700 in a single haul of the net.

Then in 1797, the Upper Locks and Canal Company built a 16-foot high dam at Hadley, Massachusetts. This and other dams built during the Industrial Revolution blocked the salmon's return to its native breeding grounds and ensured a quick end to the once prolific runs of the species.

Periodic attempts were made to restore the Atlantic salmon. In the late nineteenth century, millions of eggs from salmon bred in Maine's Penobscot River were released into the lower Connecticut River. But these well-intentioned efforts were bound to fail. No one at that time understood salmon habits and the salmon life cycle. This knowledge is essential to the restoration of the species.

The salmon is an anadromous fish, which means that it ascends from the sea to the rivers for breeding. Salmon spawn in fresh-water rivers in the fall, and the eggs hatch the following spring.

The young salmon or "parr" remain in the river of their birth until they are two years old. Then something very exciting happens; their parr marks -- dark spots which provide camouflage in the river -- disappear, and the fish turn an ocean-going bluish-silver. The process is called "smoltification" and it signals a change in body chemistry. When the process is complete, the salmon turn and swim downriver.

The fish cruise downstream to the mouth of the river, where they spend some time adjusting to saltwater conditions. Then they swim north and east along the coast of the Maritime Provinces, and arrive at their age-old feeding grounds off the west coast of Greenland in mid- to late fall. They are joined there by salmon from Canada, Spain, France, the United Kingdom and Ireland.

After two years at sea, the salmon sort themselves out and head for their native rivers. Nobody knows how they find their way, but when they get close to their home rivers, they are guided by their olfactory senses.

Once they enter fresh water, they cease to eat, and both the male and the female lose 25 to 30 per cent of their body weight. They travel hundreds of miles, fighting their way against the current and leaping ten or twelve feet in the air to overcome natural barriers.

When they reach their native spawning grounds, the female digs out a nest (known as a "redd") and deposits her eggs. They are immediately fertilized by the male, and the life cycle begins again.

In 1965, the Anadromous Fish and Conservation Act became law. For the first time, federal money and expertise poured into the Atlantic salmon restoration effort. The U.S. Fish and Wildlife Service, the National Marine Fishery Service, and the States of New Hampshire, Vermont, Massachusetts and Connecticut agreed on a program designed to restore and maintain a spawning population and a sports fishery of Atlantic salmon in the Connecticut River basin. They were aided by conservation organizations like the International Atlantic Salmon Foundation.

The initial results of the project were disheartening. In the first nine years, 1,250,000 fry, parr and smolt were released into the lower Connecticut River, but not one adult salmon returned. Only a few returned in the following two years. Then, quite unexpectedly, the summer of 1978 brought 95 adult salmon to the waters of the lower Connecticut River. Unfortunately, all but two of the surviving fish fell victim to a bacterial infection known as furunculosis.

Over the winter of 1978-79, the U.S. Fish and Wildlife Service took several steps to eliminate some of the previous summer's problems. It developed an anti-serum to help combat furunculosis, and installed riverside refrigeration units at the various capture sites to lower the metabolism of the salmon and thereby reduce stress.

These efforts paid handsome dividends. Of the 60 fish that returned to the Connecticut in 1979, only two died from furunculosis. In all, 36 fish survived to spawn, producing a total of 125,000 eggs. So far this year, 160 salmon have returned to the Connecticut.

The numbers are significant in more ways than one. At present, fish elevators and fishways enable the salmon to travel as far as Vernon, Vermont. This year, over 90 adult salmon have been taken at Holyoke, which by prior agreement with the New England Electric Company will trigger construction of a complex fishway at Bellows Falls.

Therefore, in spite of the many obstacles, a great deal of progress has been made towards a successful restoration of the Atlantic salmon to the Connecticut River basin.

Andy Stout is the New England Coordinator of the International Atlantic Salmon Foundation.

The original artwork in this issue of the VER is by Carolyn Stewart of Stowe and Don Hooper of Brookfield.

A Visit to the White River National Fish Hatchery

It looks like the set of *Star Wars*, or a scale model of the site of the 1980 Summer Olympics. It's a field of concrete, indented with dozens of circular and rectangular basins, some of which are capped with buff-colored vinyl domes. The White River Hatchery in Bethel, Vermont, is a futuristic setting for a very futuristic experiment: the restoration of an extinct species.

Atlantic Salmon are not extinct, but the Connecticut River strain died out generations ago when dams barred their return to their native spawning grounds. Today, the Bethel facility is landlocked, isolated from the ocean by a series of dams on the lower Connecticut River. But by 1986, fishways around four major dams will provide access to the Connecticut River and its tributaries all the way from the ocean to St. Johnsbury.

Andy Stout of the International Atlantic Salmon Foundation and plant supervisor Paul Gaston graciously provided a tour of the hatchery in mid-June. The first thing they had to explain was why a full-grown fish needs the protection of a plastic dome. "A salmon is one of the world's wildest, most sensitive animals," Stout replied. "Centuries of evolution have bred into it an instinct to flee from shadows." Vinyl domes over the outdoor fish tanks protect the salmon from people, animals, shadows -- anything that might cause stress.

The White River Hatchery keeps only a few adult salmon on hand as a reserve source of eggs. Each fall, these fish, plus some of the wild salmon captured on the lower Connecticut River are artificially inseminated. Their eggs are taken into the hatchery to be incubated the following spring. The White River Hatchery can incubate up to 4,000,000 eggs at a time.

The new-born salmon, or "fry" remain inside the hatchery under carefully-controlled conditions. Automatic feeders dispense a pre-measured amount of frozen fish meal once every ten minutes. Hatchery personnel regulate both the temperature and the chemical composition of the water in the tanks. Gaston adjusts the amount of light that falls on each of the 72 tanks, balancing the need to observe the fish carefully against the danger that shadows will startle the fish and increase their mortality.

In mid-summer, when the fish are about two inches long, they are moved to the outdoor tanks. At this stage of their lives, they are called "parr." Small as they are, their behavior distinguishes them from other species. Shadows or movement send them into a frenzy, but when they are left undisturbed, they carefully space themselves along the bottom of the tank and instinctively face "upriver" in the direction of the water source.

Just before smoltification, the salmon are loaded into a truck and shipped to several "stock-out tanks" on the lower Connecticut River. Says Stout, "one day you come out and they're all facing downstream. Then all you have to do is pull the plug!"

It takes two years to prepare a salmon to survive on its own in the ocean, and another two years before the salmon returns to breed a new generation. Stout, Gaston and others involved in the salmon restoration effort have a long and difficult task ahead of them. Stout estimates that it will take five full generations to achieve a true restoration of the species. But he thinks there is more at stake than the future of Connecticut River Salmon. "Because they are so ecologically sensitive, salmon provide clues to the condition of our environment," says Stout. "The survival of salmon is linked to our own ability to survive as a species." MM

Report From:

The Forest Resource Advisory Council

Darby Bradley

It's easy to see why Vermont became known as "the Green Mountain State." In mid-summer, the view from almost any summit is a rolling carpet of green, punctuated here and there by a square of pastureland, a thin ribbon of asphalt, or the glint of sunlight on a metal roof. If one only viewed the State from the tops of mountains, one might be persuaded that Vermont's forests are inexhaustible, enough to supply our energy and industrial needs for many generations to come.

But the view is different in the valleys where most of us live and work. Here in the hollows, we are surrounded by evidence of the growing pressures on our forest resources.

Vermonters are burning more wood than ever before. A survey of New England fuelwood use released this March concludes that a third of New England households burned wood for some form of heat in the winter of 1978-79, and that the use of wood for home heating purposes was up 30% from the winter of 1976-77.

The demand for wood for commercial and industrial uses is also on the rise. Utilities have discovered that wood can be used to generate electricity. The Burlington Electric Department plans to build a 50-megawatt generating facility which would burn over 200,000 cords of wood per year (see article, this issue). Meanwhile, due to technological advances, plywood manufacturers can now make stronger plywood from lower grades of wood. In Claremont, New Hampshire, a plant will open soon which will produce plywood strong enough for structural use, and in Winchester, New Hampshire, a methanol plant will manufacture 12,000,000 gallons of fuel per year from 50,000 cords of wood.

All these developments add up to tremendous demands on the forest resources of Vermont, and indicate a need for careful planning to prevent over-cutting and poor management.

Concern over the future of Vermont's forests led to the formation of the Forest Resource Advisory Council (FRAC). FRAC is a quasi-governmental organization charged with the task of devising a plan for the future use and development of the State's forest resources. The Council consists of legislators, environmentalists, academicians and representatives of industry and State Government.

FRAC hopes to frame its plan with a substantial degree of public participation. FRAC's Resource Policy Team is working on a public education project which involves identifying forest resource issues and options and assessing their environmental, economic and social implications. The FRAC Team will present these issues to the public through the use of "scenarios," or projections of the future given different courses of action.

Vermonters must answer three basic questions about their forest resources: (1) how much wood should be cut, (2) what's the best way to cut it, and (3) what should the wood be used for?

(1) How much wood should be cut? Deciding how much to cut involves long-range projections of supply and demand. If Vermont's wood products industry expands rapidly and over-harvesting begins, in 50 years Vermont's forests could be severely depleted. This is what is happening now in the Pacific Northwest.

On the other hand, if the people of Vermont decide how much wood can be safely harvested, and the wood products industry expands more slowly, we could eventually reach a stable situation in which the annual harvest never exceeds the annual "allowable cut." Almost everyone will agree that the second scenario is better. The purpose of this exercise is to get people thinking about what will be necessary to achieve it.

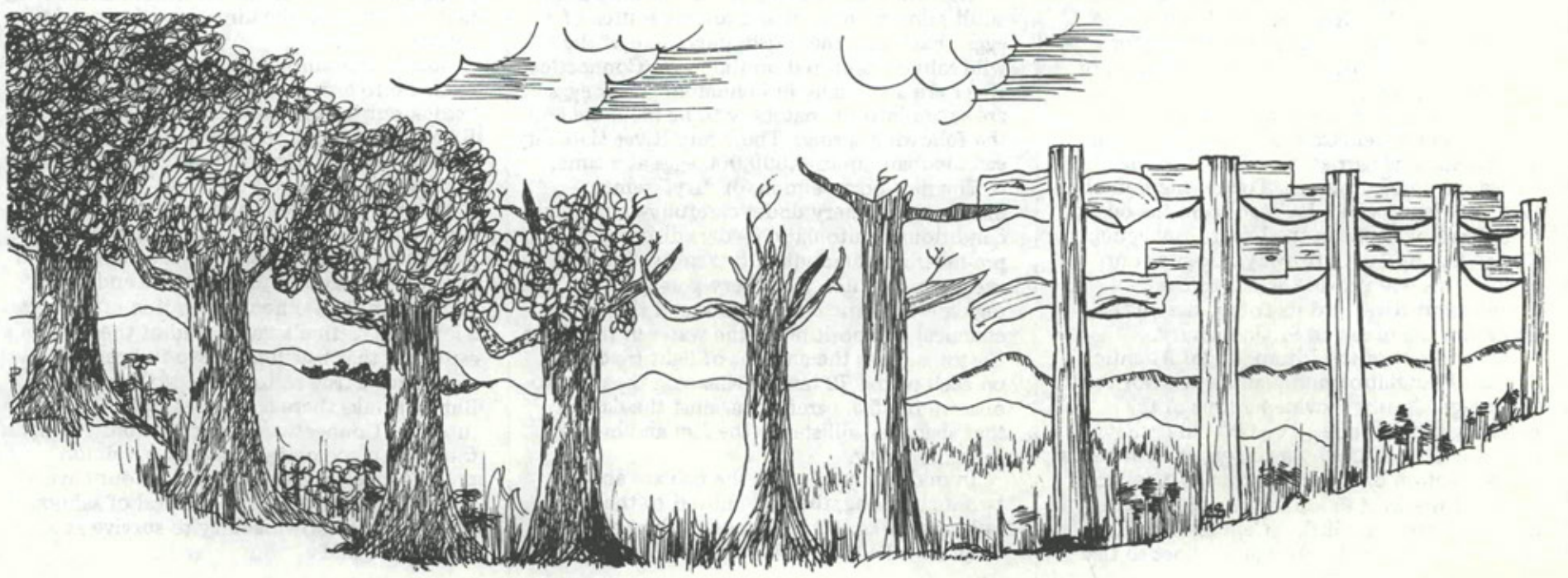
(2) How should the wood be cut? Should Vermont manage its forests for prime quality trees or for biomass? In other words, should we be more concerned with quality or quantity? Management for biomass usually means clear-cutting on 30-year rotations to produce the greatest volume of wood for energy or reconstituted wood products. Management for prime wood involves selection cutting on a 50 to 80-year rotation. The latter option would probably require more governmental intervention in the marketplace through regulation and incentives.

(3) How should the wood be used? FRAC is assuming that Vermont's sawmill and pulp and paper industries will remain relatively stable, and that the most growth will occur in the wood energy and reconstituted wood products industries. If that is the case, then the State must decide whether it will give priority to small-scale wood energy (residential, commercial and institutional heating), medium-scale wood energy (industrial and utility uses), large-scale wood energy (methanol production) or to non-energy uses (manufacturing particle board). With each of these options, there are advantages, disadvantages and trade-offs to be considered. For example, the construction of a large power plant concentrates truck traffic and harvesting in one location. But at the same time, a single large industry can purchase air pollution control equipment which will keep emissions lower than if the same amount of wood were burned in household stoves.

When the Resource Policy Team completes its work (scheduled for next fall), it will present its findings to the public through reports, meetings and hearings. It will seek the public's vision of the future of Vermont's forests as well as opinions on the types of programs and policies State Government should initiate in order to realize those objectives. FRAC will review the information it receives and present its findings and recommendations to the Governor, the General Assembly and State agencies.

Through the Forest Resource Advisory Council, Vermont citizens have an opportunity to significantly affect programs and policies for the State's forests. Developing a plan which will deliver the greatest benefits to the people of Vermont is what this project is all about. The members of FRAC invite you to step forward and make your opinions known.

Darby Bradley is the Vice-chairman of the Forest Resource Advisory Council and VNRC's Staff Attorney.



In Brief

An Insider's View of Act 250

Peg Garland

Vermont's landmark Act 250 is one of the most comprehensive State land use and development laws in the nation. It was passed by the 1970 session of the General Assembly in response to requests for assistance from small communities in the southern part of the State which were faced with large-scale second home development.

The statute was designed to regulate growth, not to stop growth. It was intended to provide for proper use of Vermont's resources and to ensure environmentally-sound development.

The Act is divided into two parts: a regulatory component and a planning component. The regulatory section, which requires State permission for large-scale development or subdivision of land, became effective on June 1, 1970. The planning section sets a timetable for approval of three plans: an "Interim Capability and Development Plan" (an inventory of existing land uses and physical resources), a "Capability and Development Plan" (guidelines for local and regional planners plus expanded permit criteria), and a State land use plan. The Legislature adopted the Capability and Development Plan in 1973, but the State land use plan died in committee in 1976.

The Environmental Board, composed of nine members appointed by the Governor, has responsibility for the overall administration of the Act. The Board has rule-making authority to interpret the Act, and it is also the appeals board for decisions of the District Commissions.

The success of the program is due in great measure to its decentralization. The staff of the Board and the District Commissions consists of an Executive Officer, seven Coordinators and eight secretaries. When 250 was enacted, the Legislature decided not to develop a new technical support department. Existing agencies provide technical expertise for the District Commissions and the Environmental Board.

Funding for the 250 program is provided entirely by appropriations from the general fund. Fees paid by permit applicants offset approximately one-third of the expense.

Applications for permits are made to one of nine three-member District Environmental Commissions appointed by the Governor. The Commission members are local citizens who are familiar with local conditions and philosophy and whose decisions are therefore acceptable to the community.

During the ten-year history of the Act 250 program, more than 100 Vermont men and women have served as District Commissioners and Environmental Board members. These unpaid citizens, broadly representative of the Vermont community, have been the backbone of the program and they are the major reason for its success. Their dedication and devotion to the process and to the protection of the quality of life in Vermont is without precedent. Their patience, perseverance, and their long hours of hard work deserve the admiration and gratitude of the people of Vermont.

The 250 process is a public process in which landowners, local officials, regional planning commissions and State agencies participate as equals. The process is designed to encourage conflict resolution, and resolution frequently occurs before the formal hearings begin.

The District Commissions evaluate permit applications at evidentiary hearings. They use criteria specified in the Act which deal with natural resource impacts as well as impacts on municipal, regional and State services. Permits are usually granted on the condition that the proposal be altered to eliminate any adverse impacts identified by the Commission.

In ten years, the program has received 3708 applications. 3267 conditional permits have been issued, and 93 applications (less than three per cent) have been denied. There have been 141 appeals to the Environmental Board, 16 of which have been removed to the Superior Court.

There are many myths about the Act 250 program, and I would like to put some of them to rest:

(1) "The State wants to stop growth." Act 250 was never intended to stop development, but to ensure environmentally-sound, high-quality development for the State.

(2) "Act 250 interferes with new home construction." 250 does not regulate private, single-family residences unless the new construction is at an elevation above 2500 feet.

(3) "Act 250 prevents the transfer of property." The law does not regulate the sale of property unless the parcel is being subdivided into more than ten lots of less than ten acres apiece.

Unfortunately, some people go to extraordinary lengths to try to avoid 250's jurisdiction. The quickest, simplest way to determine whether the Act applies is to consult with one of the District Coordinators. Jurisdictional questions may also be put directly to the Board by petitioning for a Declaratory Ruling. These requests are processed rapidly, normally within 50 days.

In this time of concern for the conservation of our resources, I would like to commend the foresight of the draftors of the Capability and Development Plan. Drafted in 1972 and enacted by the Legislature in 1973, the Plan addressed criteria relating to water conservation, energy conservation, and the costs of scattered development. Once again, the proud little State of Vermont anticipated national trends and enacted legislation requiring that developers consider conservation issues.

Act 250 is working as its draftors intended. In its ten-year history, it has proven that it can meet the changing needs of Vermont. We must guard this process and defend it against all threats so that it can continue to respond to the needs of the people of this State.

Peg Garland was a member of the Environmental Board from 1970 to 1980 and she served as Chairman of the Board for three years. She resigned in July in order to pursue her candidacy for Lieutenant Governor.

Alaska Debate UPDATE

The U.S. Senate recessed on August 7th without voting on the Alaska National Lands Conservation Bill. This bill, one of the most important pieces of conservation legislation in American history, would incorporate 80 to 100 million acres of federal land in Alaska into the National Park, Refuge and Wilderness systems.

The House of Representatives passed the Alaska Lands Bill in May, 1979, and the bill went to the Senate Energy and Natural Resources Committee. In November, the Committee reported a severely weakened bill that was unacceptable to the Carter Administration, House leaders and the more than 50 conservation groups represented by the Alaska Coalition.

Senators Paul Tsongas of Massachusetts, William Roth of Delaware and twelve others proposed a substitute bill which was patterned after the House bill. Senate supporters of a balanced Alaska lands bill provided a second alternative by introducing a package of five strengthening amendments to the Energy Committee bill.

On July 22nd, the Senate took up the first of the amendments, the Wildlife Refuge Amendment proposed by Senator Hart of Colorado and others. Three attempts by Senator Stevens of Alaska and his allies to table or weaken the bill were soundly defeated. These votes indicated that the Senate wanted more protective legislation than the Committee bill offered. It looked as if the Alaska Coalition and its supporters had won the battle for votes. But then Senator Stevens made it clear that he would block action on the bill with a barrage of time-consuming secondary amendments. Senate leaders, faced with an already overcrowded calendar, pulled the bill off the floor and instructed the opponents to hammer out a compromise.

The Senators announced a compromise package a week later. It was an improvement over the Committee bill, but it contained some glaring deficiencies. The Alaska Coalition considers the bill inadequate. The procedure and timetable for completing Senate action and resolving differences with the House remain uncertain at this writing.

In the balloting so far, Vermont Senators Stafford and Leahy have voted for strong conservation positions. They deserve our thanks and encouragement. When Senator Leahy announced his support for the Tsongas Amendments, he said, "We must . . . remember the generations that will follow us who, if we act properly today, will certainly praise us for our foresight in preserving . . . America's last frontier."

This report was prepared by Wally Elton of Middlebury, who has been in Washington during the debate as a member of the Alaska Coalition.

MEET THE CANDIDATES
For the VNRC Board of Directors

THIS YEAR, THE NOMINATING COMMITTEE HAS SUBMITTED A SLATE OF SEVEN CANDIDATES TO FILL SEVEN AT-LARGE VACANCIES ON THE VNRC BOARD, AND WE HAVE RECEIVED ONE INDEPENDENT NOMINATION. IN ADDITION, MEMBER ORGANIZATIONS HAVE NOMINATED FIVE CANDIDATES TO FILL TWO ORGANIZATIONAL POSITIONS.

AT-LARGE CANDIDATES

EDWARD CRONIN, JR. (Grafton)

Edward Cronin graduated from Williams College in 1968 and served for eight years in South Asia as a wildlife biologist for several international conservation organizations. He is the author of a textbook on the environmental problems of Nepal and he has written articles on natural history and conservation for national magazines.

"I have served on the VNRC Board for three years, and I feel that I can bring both experience and special understanding to the future work of the Council. The path ahead of us is uncertain. Our economic and energy problems make environmental considerations unpopular, but there has never been a time when careless planning and political expediency could so diminish the quality of life in our State. We must carry on VNRC's work for rational economic and social development. The first task is to determine the most effective way to use VNRC's limited manpower and money. There are no easy solutions, but a little input at the right time in the right place can make a tremendous difference."

JOHN P. WIGGIN (Woodstock)

John P. Wiggin graduated from Colgate University with a degree in Anthropology and Sociology, and he received a Master's Degree in Natural Resource Management from Yale University School of Forestry and Environmental Studies. He works as a forester for Laurance S. Rockefeller and the Woodstock Resort Corporation. He also directs the Woodstock Ski Touring Center. He serves on the Boards of VNRC and the Ottauquechee Regional Land Trust.

"My environmental interests include sound woodlot managment and alternative methods of preserving open lands, as well as conservation through wise use of our natural resources. As a Board member, I would be willing to contribute my knowledge of my field and to help VNRC promote its broad educational values and interests. I hope that my work would enable VNRC to have more impact on national and local environmental matters."

PATRICIA HIGHBERG (Woodstock)

Patricia Highberg received a B.A. from Smith College. She is a member of the American Forestry Association, the National Audubon Society, the Sierra Club, the Ottauquechee Regional Land Trust, the Vermont Institute of Natural Science and the Woodstock Garden Club. She serves on the boards of VNRC and Planned Parenthood.

"In California and Connecticut, I watched while subdivisions gobbled up prime agricultural lands, hills were leveled to make way for shopping malls, and septic systems poured into town storm sewers. VNRC has studied and offered solutions to many of these problems. I hope to continue working as a VNRC Board member to ensure that there will be a workable environment for future Vermonters. I want to publicize the fact that VNRC is the best and most effective conservation organization in the State, and to help raise badly-needed funds so that VNRC can carry on its work for Vermont and conservation."

MARK LAPPING (Jericho)

Mark Lapping is Associate Director of the Environmental Program of the University of Vermont. He is trained in planning, economics and law, and serves as a consultant to numerous federal, State and regional agencies.

"As outgoing Chairman of the VNRC Board, I think that I can provide perspective and further support for the Board and the membership of VNRC. Over the past three years, I have attempted to broaden VNRC's membership, and I have emphasized agricultural and energy issues. I would welcome the opportunity to continue working in these areas."

ELIZABETH CUSHMAN TITUS
(South Shaftsbury)

Elizabeth Cushman Titus graduated from Vassar College and majored in Conservation and Geology. She founded, and later served as President of, the Student Conservation Assotiation. She is on the Boards of the Merck Forest and the Conservation Society of Southern Vermont. She is the Treasurer of the Vermont Nature Conservancy and she is also the Chairman of the Bennington Garden Club. She received the Distinguished Service Award from the U.S. Department of the Interior, and the Garden Club of America awarded her the Margaret Douglas Medal for her work in conservation education.

"If elected to the Board, I would like to help VNRC expand its work in the environmental education field."

H. KENNETH GAYER (Woodbury)

H. Kenneth Gayer was a college Biology teacher until World War II. During the War, he became interested in science and research administration. For twenty years, he did operations research on naval, atomic energy, civil defense and air force problems. As a member of the Center for Environment and Man in Hartford, and during seven years with the National Science Foundation in Washington, Gayer concentrated on applied research on environmental problems. He is now a part-time farmer in Woodbury, and he is active in town and regional planning.

"I would like to help VNRC use the techniques and results of environmental research. I believe we especially need stronger applied social studies."

JANET CLARK (Barnet)

Janet Clark has a Master's Degree in Natural Resources Planning and has worked as Curator of a nature preserve and as Outdoor Recreation Planner for the U.S. Forest Service and the State of Vermont. She serves on the Barnet Zoning Board and the Connecticut River Watershed Council.

"Progress in the environmental field results from dedicated involvement at the local level as well as the activities of an honest central organization such as VNRC. As a planner, I am trained to understand issues, organize projects, and motivate people. As a Board member, I would effectively coordinate local activities."

ORGANIZATIONAL CANDIDATES

SYLVIA JARVIS SMITH
(South Burlington)
Natural Resources Committee
of South Burlington

Sylvia Jarvis Smith is a retired Classics and English teacher who holds a B.A. from the University of Vermont and an M.A. from Columbia University. She is a trustee of the South Burlington Community Library and she in involved in many organizations, including the Vermont Educational Association, the Executive Council of the University of Vermont, the Winooski Valley Park District and the South Burlington Natural Resources Committee.

"I want to work to preserve all that is Vermont. I want to help maintain its small-town atmosphere, which is threatened by bedroom communities and by impersonal "plastic" developments. We need a good forestry program to protect our forests from overcutting and misuse, and we must use our lakes and rivers intelligently. Finally, we must make it easier for Vermont farmers to work their land and pass it along to their families. Once we understand the problems and have found logical and practical proposals to help solve each one, we must take our case to the public. We have a responsibility to educate and to lead."

THEODORA W. MATTISON
(Colchester)
Vermont Federation of Women's Clubs

Theodora Mattison, a Burlington native, graduated from the University of Vermont with a B.S. in Home Economics and studied dietitics at the Peter Bent Brigham Hospital in Boston. Mrs. Mattison is an active member of the Burlington Garden Club and she is the President of the Vermont Federation of Women's Clubs.

"I am vitally interested in water resources, conservation of wildlife and preservation of our parks and woodlands. I plan to attend all local Board meetings and to work on any projects relating to those issues."

REBECCA DAVISON (Montpelier)

Rebecca Davison graduated from California State University at Sonoma and from the University of Maryland with degrees in English and Education. She worked with the Los Angeles Chapter of Zero Population Growth and served as Assistant Director and Editor at the Population Institute in Washington, D.C. Davison was Assistant Editor and then Editor of the *Vermont Environmental Report* and she is now editing a quarterly report on Air Quality and Solid Waste Programs for the Agency of Environmental Conservation.

"I believe VNRC can be very effective. I would like to see the Council expand its research and publishing capabilities in order to influence State policy and generate public discussion. We need to broaden our membership and we need to improve our lobbying effort by pinpointing the most critical issues and organizing our members to support specific legislation. Finally, I think that the Board should help the staff carry out projects and that it should be more active in fund-raising."

MOLLIE BEATTIE (Grafton)
Green Mountain Chapter, Society
of American Foresters

Mollie Beattie has lived in Vermont for 12 years. She holds a Master's Degree in Forestry from the University of Vermont, and she is currently employed by the University as the Supervisor of the Grafton Forest Resources Project. Previously, she was a researcher with the Resources Policy Center at Dartmouth College and she has also worked as a newspaper reporter and as an instructor for Outward Bound. She became a member of VNRC in 1975, and she serves on the Executive Committee of the Green Mountain Chapter of the Society of American Foresters.

"The physical extent of Vermont's forest and its importance to our psychological and economic well-being make the issues presently facing the forestry profession tremendously significant. There is an urgent need to improve the dialogue between foresters and environmentalists so that each group can understand the other."

FRANCIS WHITCOMB (South Albany)
Vermont Maple Producers Association

A former teacher and principal, Francis Whitcomb operates a diversified farm in South Albany. He has an M.A. in Education and an M.S. in Conservation and Environmental Studies from the University of Michigan. He is a Lister for the Town of Albany, Secretary of the Planning Commission, President of the Orleans County Maple Producers Association, and he represents the Vermont Maple Producers Association on the VNRC Board.

"I am particularly interested in coordinating the use and management of Vermont's land and water resources with the continued growth of the State's farm base, improving our forest resources and the maple industry, creating employment opportunities, and keeping Vermont at the forefront of environmental programs and leadership."

LEIGH SEDDON (Montpelier)
Lake Champlain Committee

Leigh Seddon graduated from the University of Vermont in 1975 with a degree in Resource Economics. He was the Assistant Director of VPIRG from 1976 to 1978 and he is the President of Community Builders of Vermont. Seddon has served on the Executive Council of the Lake Champlain Committee since 1978 and he is also involved in Citizens for Vital Communities and the Vermont Energy Action Council.

"In the 1970's, Act 250 helped stop bad development, but simply preventing bad development does not ensure that our resources will be used wisely. In the coming decade, Vermont must plan for the future of our land resources, since their use will determine the degree to which Vermont achieves economic and energy self-sufficiency. The Council can play a key role by initiating legislation and working with cities, towns and counties. As a member of VNRC's Board, I would work to make regional planning an effective tool for directing Vermont's future development."

The Council

BARRY COMMONER, CHAMPLAIN ISLANDS TOUR, SHELBURNE FARMS HIGHLIGHT

SEPTEMBER 13TH'S VNRC ANNUAL MEETING

This year's Annual Meeting promises to be another rousing mix of business and pleasure. Barry Commoner, Botany professor and prominent spokesperson for the national environmental and energy movements, will keynote the meeting.

The meeting will take place at Shelburne Farms in Shelburne, Vermont on Saturday, September 13th. Council members can choose from a variety of morning workshops and field trips. An agricultural tour, a woodland workshop and a natural history excursion will leave from the Great Barn at 9:00 a.m. The morning will also include a solar tour and a trip around several Lake Champlain islands.

At noon, we will meet back at the Webb Mansion for lunch and socializing. Most of the luncheon fare will consist of food grown and prepared right at the farm. Those who prefer may bring a bag lunch and have a picnic on the lawn or beach. After a business meeting at the Carriage Barn, Dr. Commoner will speak. A brief discussion will follow, and we will adjourn about 4:00 p.m.

The combination of Shelburne Farms and Barry Commoner should make this an irresistible occasion. We sent the day's agenda, field trip descriptions, directions and registration forms to all VNRC members on August 8th. Please respond promptly. We can accomodate 200 for lunch and 300 for the afternoon meeting, but based on attendance at the last two Annual Meetings, we may exceed those numbers.

If for some reason your registration forms got lost, give us a call at 223-2328. Hope to see you at the meeting!

SPECIAL THANKS

A number of Council members have taken time this month to give us a hand with bulk mailings. We want to especially thank Cheri Langer, John Holden, Hilda Hendrickson, Bernice Burnham, Ann Rosenau, Eugenie Doyle, Sam Burr and Alice Hooper.

Also, special thanks to Elizabeth Mullikin, who has been working on a travelling display of VNRC literature, and who helped with the production of this issue of the VER.

The Council is pleased to announce the receipt of a $3,000 grant to aid the work of its Law Service. The donor has asked to remain anonymous.

WELCOME JOHN WIGGIN

John Wiggin, forester for the Woodstock Resort Corporation, was recently appointed to the VNRC Board to fill the vacancy created by the resignation of William H. Eddy, Jr. Bill stepped down regretfully because he felt his work, which involves a fair amount of international travel, left him too little time to devote to Board business. Our thanks to Bill for his help and good sense while on the Board.

VNRC/NWF LEADERSHIP CONFERENCE

Many VNRC members do not know the Council's basic objectives nor the process by which it arrives at them. That was one of the conclusions reached by 22 participants in a leadership conference sponsored by VNRC with the assistance of the National Wildlife Federation.

Members of the Council and its Board and staff met over an early June weekend to discuss the strengths and weaknesses of the organization. They concluded that the Council needs to improve the process by which it establishes its goals and communicates them to its membership and to the general public. They recommended that the Board appoint a committee to develop ways to establish long-range and annual goals for the Council.

Participants also recommended the creation of a legislative action committee to assist the Council's lobbying activities, and they suggested that the Council's fund-raising committee be broadened to include membership development, since these activities are closely realted.

Finally, the conference discussed how to make better use of the skills and energies of VNRC members. Recognizing that there is more to be done than can be accomplished by the staff and Board alone, conferees concentrated on finding ways to encourage greater participation by the membership in the work of the Council.

The Board of Directors considered the recommendations of the leadership conference at its July meeting and gave them an enthusiastic endorsement. The Board will appoint a planning committee and early progress will be reported at the Annual Meeting. The Board also established a legislative action committee headed by Representative Anne Just of Warren. The committee will begin work immediately so that the Council's legislative priorities will be well-developed by the beginning of the 1981 General Assembly.

WHOOPS! YOU CAN'T GET THERE FROM THERE.

IF YOU'RE COMING TO THE ANNUAL MEETING, YOU SHOULD GET OFF ROUTE 89 AT EXIT 13, NOT EXIT 12 AS INDICATED IN THE INVITATION.

The reason you received this bi-monthly issue of the VER in mid-August instead of early August is that, according to our bylaws, nominations for the Board of Directors must remain open until 30 days before the Annual Meeting. Since the Annual Meeting is September 13th this year, we were unable to go to the printer before August 13th.

SUMMER BOARD MEETING

The Board of Directors held their third-quarter meeting for 1980 at Chairman Mark Lapping's home on July 28th. The Board took several actions of interests to Council members.

The Directors voted to recommend an increase in membership dues for the coming year. They proposed to raise individual memberships from $12.50 to $15.00, family memberships from $15.00 to $20.00, and non-profit organization dues to $25.00. Business memberships would remain at $75.00 and up, student memberships would continue at $5.00 and limited income and senior citizens would be $6.00. If the Annual Meeting approves the Board recommendation, it will be the first dues increase in three years. The Board also directed the Council staff to study the possibility of establishing a lifetime membership policy.

In other action, the Board discussed the Council's policy of not allowing its mailing list to be used for solicitation. We do not propose to sell our list, but we are considering trading the list with like-minded groups in order to increase membership. The Board referred the question to the Finance and Membership Committee for study.

Seward Weber reported that the Council will co-sponsor, with the Public Service Board, a conference on the potential of hydroelectric development and its environmental impacts.

VNRC is also exploring the possibility of initiating a lawsuit to enjoin the Vermont Highway Department from constructing the last eleven miles of Interstate 93 near St. Johnsbury. The Council does not intend to obstruct the highway, but believes that it should be relocated to avoid several large and productive dairy farms.

VNRC Adds 202 New Members in May and June

We are pleased to welcome the following new members to VNRC: Jim Brooks, Jamaica; Life and Light Center, Brookfield; Dianna Morley, Manchester; Dr. C.P. Albright, St. Johnsbury; Wes and Jean Cate, Montpelier; Center for Northern Studies, Wolcott; B. Allen Rowland, Lawrence, Mass.; Mitchell Kihn, Chittenden; Janet I. Clark, Barnet; Jon Parker, Charlotte; Mr. and Mrs. Ellsworth Bunker, Dummerston; Charles and Bren Wilson, Wolcott; Sheryl Felty, North Ferrisburg; George and Ann Clay, Arlington; Peter Zika, Burlington; Bruce Seddon, Westfield; Mr. and Mrs. Eugene Price, Westminster; Cam Marcus, Burlington; Kenneth Meyers, Wayne, New Jersey; Joel Bernstein, Waitsfield; Jan S. Eastman, Peacham; Nick and Frances Ecker-Racz, Glover; Pat Tivnan, Essex Junction; Sarah Thorne, Wellesley, Mass.; Jill Lindenmeyr, Wolcott; David Morrison, Enosburg Falls; Gen. Edwin Little, Fair Haven; June Nygren, Sutton; Kathleen Elliott, South Pomfret; Joe and Dover Ford, East Ryegate; Meredith Leonard, Thetford Center; Paul Heald, South Burlington; Mr. and Mrs. E.J. Williams, Holyoke, Mass.; J.P. Monette, Newport; Mrs. T.L. Choffel, Corinth; R.N. Buck, Moretown; Al and Margaret Coons, Wells River; Alan Thorndike, Stowe; Snyder/Anderson, Florence; Gordon Pettingell, East Randolph; Elsie Flint, Barre; Mrs. G.W. Ray, East Thetford; Donald Bellstrom, Townshend; Sarah Seidman, Montpelier; E.J. Koenemann, Montpelier; R.A. Meredith, Island Pond; P.K. Dodd, Montpelier; Vermont Folk Life Project, Woodstock; C. and M. Spencer, East Burke; Mr. and Mrs. James Nassau, Underhill Center; B.E. Smith, Windsor; Marion MacDonald, Montpelier; Ellen D. Hill, East Montpelier; Woodland Owners Association, Brattleboro; Richard Sullivan, Burlington; Diane Rand, Rockingham; Mr. and Mrs. Julian Pease, Woodstock; David H. Dumont, Burlington; Florence Fogg, Wilder; Mr. and Mrs. J.C. Stratton, Washington; Barbara H. Smith, North Pownal; Bob Titterton, Morrisville; Fred Picker, Putney; Ruth Biggs, New Haven; Johnathan Altman, Putney; Dr. and Mrs. Jerry Rankin, St. Johnsbury; Donald Brown, Bristol; Robert Hardy, Stowe; Robert Earle, Brattleboro; F.C. Alden, South Royalton; David Raymond, Sharon; Mr. and Mrs. Hugh Campbell, Waitsfield; Lillian Farber and Beth Friedelson, Newfane; Donald Miller, Jeffersonville; Mr. and Mrs. Adam Albright, Windsor; Mr. and Mrs. Gordon Amidon, Williston; Jennifer Brown, Florence; Emma Lou Rothman, St. Johnsbury; Mary L. Distasio, Brownsville; Mr. and Mrs. John Hawkins, South Strafford; Stephen Herson, Tunbridge; Mary Ricker, East Montpelier; Max H. Kraus, Huntington Valley, Pennsylvania; B.F. Hoffman, Milford, Maine; Ed Hutchinson, Montpelier; Kenneth Comar, Bennington; Richard Wooten, Chester; Donald I. Gurney, North Springfield; Alan Pistorius, Middlebury; William Osgood, Northfield; Howard and Edith French, Cuttingsville; Judy Haas, Putney; Michael Rogers, North Tunbridge; Mrs. G.W. Van Vechten, Northfield; Sarah Vail, Chester; Mrs. William Herlich, Grafton; David Pullman, Williamstown; Frederick Bigelow, Norwich; Dr. J. Rinse, East Dorset; Mrs. Mary Milanesi, Chester; Gordon E. Lillie, Bellows Falls; Mr. and Mrs. Stephen Brown, Manchester Center; Citizens for Safe Energy, Dorset; Mr. and Mrs. Peter Sturges, Pawlet; Mr. and Mrs. S.B. Lande, Bristol; Dr. D.R. McIntyre, Rutland; Mr. and Mrs. William Canby, Stowe; W.C. Patenaude, East St. Johnsbury; Janet Newkirk, Dorset; Margery Stebbins, East Middlebury; Barbara Duncan, Thetford Center; Mr. and Mrs. D.G. Wooden, St. Albans; Mr. R.S. Babcock, South Burlington; Mr. and Mrs. W.J. Preston, Jr., Burlington; Donald and Julie Peddie, Middlebury; Gregory Prince, East Thetford; Ann L. Chandler, Barre; Mrs. E.C. Titus, Shaftsbury; William A. Shimel, Burlington; Michael Hamblin, Hinesburg; Mr. and Mrs. Francis Lobdell, Londonderry; Mr. and Mrs. Frank E. Irsch, Brattleboro; Mr. and Mrs. James Paton, St. Johnsbury; Philip Cummings, Woodstock; Shirley Beresford, Bradford; Mr. and Mrs. J.B. Knowles, South Londonderry; Will Stevens, North Ferrisburg; Thomas Massouth, South Royalton; Alexandra Thayer and Roger Fox, East Hardwick; Harriet Hilts, Windsor; Dr. J.L. Holm, Barre; Chris and Debra Kibbe, Westminster; Elizabeth Champe, Thetford; John C. Baas, Jr., Stowe; Edward Koren, Brookfield; John Novielli, Putney; Bill and Ann Heinzerling, Waitsfield; Jane Williams, Colchester; Leigh Seddon, Montpelier; Lucy McVitty, Hartland; Charles Burnham, Stowe; Lil and Gusti Iten, Warren; Steven Rockefeller, Middlebury; Robert Stocker, Chester; Priscilla Sherwood, West Brattleboro; Mr. and Mrs. H.J. Bates, Burlington; Dr. and Mrs. Frank Bruch, Middlebury; Sylvia Palardy, Winooski; Mr. and Mrs. Arnold Kirchheimer, West Brattleboro; Paula and Richard Wickman, Orwell; Pauline Dukeshire, Hartland; Richard Bauer, Middlebury; Mr. and Mrs. Murray Foote, Charlotte; Mrs. Grace Wicks, Bennington; Mr. and Mrs. Kenneth D. McLaren, Dorset; Mrs. Ernest Palola, Jamaica; Kate Taylor and family, Clarendon; Jon Rose, Manchester Center; L. MacIntosh Strong and family, Warren; Allen Britton, Jr., Norwich.

Book Review

The Beginning Naturalist: Weekly Encounters with the Natural World
Gale Lawrence
(New England Press, paperback $6.95)

Like many who have come home to Vermont after a long residence -- or even a lifetime -- elsewhere, Gale Lawrence felt an urgent need to learn about nature. "Back in Vermont," she says, "hardly a day passed when I was not brought face-to-face with a natural phenomenon." To learn more about the world around her, Lawrence volunteered her time at the Green Mountain Audubon Nature Center in Huntington, Vermont. There she encountered "busloads of school children" who besieged her with basic questions about the workings of nature, such as "where does soil come from?" "what do worms eat?" and "why are there so many bugs?"

As Lawrence began to educate herself as a naturalist, she did not lose track of these basic questions. She now writes a natural history column for several Vermont newspapers, and 52 of her essays have been collected in a book called *The Beginning Naturalist.* This collection is written in a straightforward and engaging style, with an absolute minimum of technical language and long-winded explanations. This makes it an indispensible guide for "the beginner who doesn't know where to begin."

Lawrence introduces a discussion of the characteristics and habits of different birds with wry comments on the table manners of several species who visit her feeder in winter. When she writes of a curious season that she calls "spring into summer," she talks about peepers, robins, mosquitoes and dandelions -- what would spring be without them?

Gale Lawrence may be the patron saint of backyard flora and fauna. She gives due accolade to glamorous wild creatures such as foxes, wood ducks and red polls. But she devotes most of her attention to mundane and ordinary natural phenomena -- earthworms, soil, snow, buttercups, chipmunks and cattails -- the kind of "wildlife" that we're all aware of even when we're not schlepping through the woods with binoculars and field guides. These common species intrigue Lawrence because she recognizes that their very "ordinariness" is usually the result of ingenious adaptations.

Occasionally, one becomes impatient with the attention she gives to information which is common knowledge for most adults. She carefully explains, for example, that "no two snowflakes are alike." But even when the information is familiar, Lawrence's unflagging enthusiasm for the natural world recreates some of the thrill of initial discovery. Did you know, for instance, that the "cold light" generated by fireflies is more energy-efficient than anything General Electric has devised? Less than one per cent of the energy released when a firefly generates light is released in the form of heat. Flourescent lights, by comparison, give off 78 per cent heat and 22 per cent light, while incandescent light bulbs produce 90 per cent heat and only 10 per cent light.

Lawrence's flights of fancy and philosophy are most enjoyable. They make the book light, readable and entertaining. Here is Gale Lawrence on porcupines:

> Seeing them . . . reminds me that not all of nature's children are sleek, agile, keen-sighted, and swift. The porcupine's evolutionary path has allowed it to be slow, fat, nearsighted, and cumbersome -- yet successful.

The balance is just right. *The Beginning Naturalist* is a book that both beginners and experts can read and enjoy. MM

A Flush Beats a Full House

Did you ever wonder what happens when you flush the toilet? What to do when your septic system stops working and the waste backs up into the house? What a waterless toilet is and why anybody would want one? What regulations apply when you install or repair a new septic system? The Vermont Natural Resources Council and the Agency of Environmental Conservation have compiled the answers to these and many more questions in two workbooks called *Rural Sewage Treatment in Vermont.*

The first book, *A Guide to the Alternatives,* is written for people who who need solutions to sewage problems in their homes or businesses, or who want information on sewage treatment in Vermont.

The second book, *A Planning Manual,* is for town officials and others who have questions about community sewage treatment. It is directed towards the special needs of areas that are not now served by central sewage treatment systems.

The two workbooks were written by Michele Frome, former Director of VNRC's Sewage Planning Project, under a grant from the U.S. Environmental Protection Agency. The books are free; all you have to do is ask! Write the Agency of Environmental Conservation, 208 Program, State Office Building, Montpelier, VT, or call 828-2761.

VERMONT ENVIRONMENTAL REPORT

Editor	Marion MacDonald
Executive Director	Seward Weber
Chairman of the Board	Mark Lapping

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In this issue:

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- Act 250 Retrospective by Peg Garland
- Atlantic Salmon Return to the Connecticut River
- VNRC Photo/Drawing Contest