**SEWAGE**

The Toilet Papers, Sim Van der Ryn, 1978, $3.95 from:
Capra Press
631 State Street
Santa Barbara, CA 93101

Captain Compost has finally written his memoirs—a warm addition to the pile of information now available on compost toilets, by one of the people most instrumental in their development. Toilet Papers covers a good bit of the same ground as the Rodale book and the OAT report, but focuses much more on creative owner-built applications and a lot of the reasoning and values underlying new approaches to sewage. Discusses community alternatives to central sewage plants, home compost and privy management, and construction of various designs. Contains pictures of numerous beautiful dry toilet installations that show well what these changes in attitudes are producing. Gives a much-needed depth to the normal technological hardware discussions. —TB

---

**FOOD**

The Village Texturizer, by Meals for Millions Foundation, 1977, $3.95 from:
VITA Publications
3706 Rhode Island Avenue
Mt. Rainier, MD 20822

Does your village need texturizing? Strange titles aside, this manual shows why and how to build a "pop-cake maker." Simple to make, cheap ($50), can be used at home or as a small business, can be built to use a variety of fuels, can quick-cook a wide variety of tasty and nutritious foods from inexpensive vegetable flours. Okay, but what are pop-cakes? A mix of flours is put between two heated plates under pressure. When the pressure is released, the moisture in the cake expands with a loud pop to give you a tasty, crunchy, nutritious puffed snack food. Variations are used all over Asia by street vendors. Manual contains a guide to complementary protein mixes, fuel requirements, how to figure costs for its use as a small business. —TB

---

**GOOD THINGS**

Non-Radioactive Smoke Alarms

Isn’t it nice to be forced to have your own radioactive source in your home (“preferably in every sleeping area”)? Ionization-type smoke detectors, which make up probably 95 percent of all smoke detectors sold, contain radioactive isotopes as their ionization source. Most models we’ve looked at make absolutely no mention of radioactivity in either product literature or on the mechanism itself. The manufacturers claim the radiation is totally harmless (hear that before?) alpha radiation that doesn’t even penetrate through the casing. No mention is made of what happens when the plastic case breaks or is left off. We’ve seen some already with cases taken off while replacing batteries and not replaced. No mention is made of what happens after the alarm is discarded, burned or landfilled. An unnecessary hazard does exist, in part because of the millions of units sold, and in part because the radioactive source is unnecessary. Photo-electric smoke alarms are available at similar prices to the radioactive units. They’re extremely hard to find, because the ionization units are so highly promoted. We finally located a source for them (Sears Catalog—$19.95) after trying more than 20 stores (and after our house burned down). Make sure your friends are aware of the hazards of the ionization types—they should be banned. —TB
AGRICULTURE

The People's Food Commission: A Cross-Canada Inquiry into the Food System
4th Floor
75 Sparks Street
Ottawa, Ontario
CANADA

Not unlike other people's commissions, this group hopes to launch an in-depth, nationwide inquiry that avoids the pitfalls and dead-endedness of most government investigations. Their focus will be the issue of food as it cuts across province, class and interest group. A ten-member commission will travel to 65 communities to hear testimony from the locals on the food system, and to identify the common interests of producers, consumers, workers and people of the Third World. They will seek answers to such problems as rising food costs, rural depopulation, poverty among primary producers, the impact of corporations, wages and working conditions in the food industry, and nutrition. A decentralized support network is now being formed and hearings will begin in September, ending by April of next year. It should be instructive to keep tabs on this ambitious effort.—SA

Willamette Valley Planting Guide, $1 from:
Lane County Office of Appropriate Technology
Dept. of Community Relations
Public Service Building
Eugene, OR 97401

For all our regional friends, here's a handy 17"x22" poster detailing the starting and planting dates in the Willamette Valley for everything from artichoke to watermelon. Includes notations on recommended spacing and the number of days to maturity. Now let's get that food up! —SA

The Primo Plant: Growing Sinsemilla
Marijuana, Mountain Girl, Leaves of Grass/Wingbow Press, $4.50 from:
Bookpeople
2940 Seventh St.
Berkeley, CA 94710

What with all the poisoned pot that is now coming into the country, you may want to brave the elements and grow your own. Mountain Girl, of Merry Pranksters fame, has lovingly put together this little manual for growing pure, organic sinsemilla (seedless) grass. Her topics range from seed selection and composting to pruning, pests and harvesting. Nicely illustrated and to the point. Guess to whom it's dedicated! —SA

RAIN

Rain helps things grow. We are all part of a joyful process of learning to live more lightly on this earth. Our contribution to that process is a magazine that:

• networks information about people and groups taking positive actions in their lives, communities and workplaces,
• evaluates and gives access to practical tools, data and plans for the development of technologies appropriate to changing energy and resource conditions,
• explores ideas which can enable the increased self-reliance of our regions, neighborhoods and families,
• analyzes policies, programs and projects that help or inhibit our ability to make these transitions.

We live and work together out of a big green house in Portland. We aren’t always consistent in our ideas and goals, but we have fun thinking about these things. We enjoy feedback on ideas and resource listings, and we appreciate the contribution of any information or bits of wisdom you wish to share...

RAIN's office is at 2270 N.W. Irving, Portland, OR 97210. Ph: (503) 227-5110.

RAIN STAFF: Tom Bender Joan Meitl Linda Sawaya
Lane deMoll Lee Johnson Steven Ames

FORESTRY

The Forester's Almanac 1977, free from:
Pacific NW Forest and Range Experiment Station
P.O. Box 3141
Portland, OR 97208

An access guide for information on forest and rangeland research in the Pacific Northwest. Whole Earth format. Expansion of materials listed beyond those produced by the Experiment Station would be a valuable service to people trying to separate the wheat from the chaff in this area. A good start though, to see what issues are covered by existing research and which ones are not. —TB
In the early '70s, when a lot of people were wringing their hands and wondering what had happened to the Movement, some folks were already digging into the new decade, grappling with a whole new set of issues and preparing for a long, hard struggle. Lloyd Marbet of Portland, Oregon, was one of those people. And nuclear power was his issue. Somewhat inadverently at first, Lloyd jumped into the nuclear political arena, fueled by a sense of moral outrage over the preposterous implications for humanity, and committed to enlightening his adversaries about the imperatives of entering into the Faustian Bargain.

Several years and countless hearings later, after a law degree's worth of self-education and a lot of personal sacrifice, Lloyd Marbet has grown into a well-tempered, highly skilled nuclear intervenor, using the legal and administrative processes available to citizen activists in a highly responsible manner—navigating the dense undergrowth of the nuclear regulatory and licensing bureaucracies in order to turn the nuclear option on itself and let it fail of its own ineptness.

For the rest of us, the fact that one person like Lloyd is capable of channeling his concern for the planet's future into the legal quagmire, as well as the minuata of energy-related considerations that accompany it—load factors, plant economics, risk analyses—may well keep more nukes out of our lives and push us that much closer to realizing a humane and livable alternative. Clearly, in such an arena, the powers of one highly-dedicated soul to affect change at critical junctures has a bearing on the survival of us all.

"When I came on board," says Lloyd, "there was simply no one else to do it!" Among his first activities was an initiative petition to set more stringent standards on the release of radioactivity in 1971. Then, in 1973 he became involved in his first rate hearing with the Portland General Electric Company (PGE) and since then has been through four more, plus another involving Pacific Power and Light. By the fall of 1974, when the public was just beginning to wake up to the extent of the growth fantasies being forecast by the nuclear industry, Lloyd had become an intervenor in the hearings for the licensing of two nuclear units proposed by PGE at Boardman, Oregon. He subsequently backed off becoming more involved. But when the potential encroachment of a Navy bomber base forced the relocation of the site to Pebble Springs on the Columbia River, he began intervening in the state hearings, and took on the federal hearings as well in 1975. Since that time it's been full-tilt intervention.

It was at a licensing hearing on the Trojan nuclear power plant where Lloyd first met Robert Cobb, a businessman-activist disturbed by the prospect of a nuclear future and unafraid of engaging in controversy. Cobb has already founded his own self-styled advocacy organization called Forelaws on Board, a reference to Barry Commoner's Four Laws of Ecology, among other things. He eventually took Lloyd under his wing, providing him with the tools and confidence to get him moving down the right path. Gradually Cobb became less involved in direct intervention and began channeling his energies into establishing an intentional community. Lloyd became the main intervenor, assisted by volunteers and encouraged by Cobb. Despite a general lack of legal skills, or maybe because of it, Lloyd took the leeway to establish his own style of nuclear intervention.

After several years of constant effort and various legal and extra-legal tactics, Lloyd scored a significant procedural victory in March 1977. At that time the Oregon State Supreme Court granted his petition, necessitating a substantial delay in the issuing of site certificates for the Pebble Springs project by ordering the Energy Facility Siting Council to rehear PGE's application from scratch. Among the Court's concerns with the Siting Council's insufficient setting of standards were those involving the financial capabilities of the applicants, their...
qualifications to construct and operate plants, and the distinction between "need" and "demand" for power. Of course, the Court had only addressed the procedural questions, but the issues involved were real and not impervious to changing political and economic climates. Clearly the interface between one person's strategic coup and our larger vision was the space it freed up for public education, the demonstration of renewable energy options and other positive forces to rush into the vacuum that had been created. Without such successes, the hard energy path would move closer to intransigence.

More recently the protracted length of the intervention process (which, says a friend of Lloyd's, if you are not careful will teach you patience) has come full circle as a positive factor in its own way. For example, the last few years have brought heavy developments for the nuclear power industry and its governmental bedfellows that have compounded the difficulties already at hand. The Brown's Ferry accident. Controversy over the Rasmussen report. Waste disposal headaches. Sister Bertrell's radiation studies. And, of course, incredible inflationary pressures. Only a few years back many of these problems were more difficult to substantiate. Like toxins in the environment, the evidence is accumulating.

Also in this time, Lloyd's begun to see a return on the learning investment, and with enough support can now attract bright, well-qualified advocates experienced in energy issues and willing to wade through the mountains of paper to do the necessary research. It was such people who helped him rally from a temporary impasse in his one-man intervenor/lawyer/witness tactics with fresh input and expertise. Now, Lloyd finds himself more able to concentrate on the argumentative side of the intervention process, absorbing more of the legal details at hand. In turn, he has taken on a kind of coordinator/mother role: drawing together all this good talent, keeping it in line, directing its flow of information and hoping that the whole effort will work out.

Come June, the re-hearings on Pebble Springs will convene. The new rules by which the Siting Council is to judge an application for site certificates are in place and the process will start up again. Lloyd, in conjunction with his advisors, researchers and supporters will take a new case before the Council using his well-polished skills as non-lawyer to carry the safety and operational issues on his own and coordinating a host of other testimonies focusing on many different areas of analysis.

Despite this strong back-up team, it is clear that the burden of the Pebble Springs intervention rests squarely on Lloyd Marbet's shoulders—and it is no easy one. Total dedication means sacrifices and he has made his share. Have no "normal" career means piecing together an income and financial budget from friends and supporters. Lloyd could always use more help there. In addition to material sacrifices, personal relationships can suffer from the intensity of an intervenor's lifestyle. And there's always the question of just what Lloyd might be doing if his whole life hadn't become committed to such a time-consuming cause. A moot question, perhaps, because as he says: "Any change that a person wants to be­come involved in means changing the rest of your life."

Lloyd continues: "I never realized all this would result," reflecting on years of hard and persistent work. "Of course, it's obvious that there's more to life than just issues. It means getting a perspective on the limitlessness of things, and the limitedness of our own roles—what we can do here and now. I'll be 40 years old in 1986 when Pebble Springs is projected to be completed and operating, which means I would be about 80 when it would be ready to be shut down permanently. Upon decommissioning, it would probably be en­tombed for 100 years and then dismantled, which means I would never live to see it dismantled, and neither would my daughter. This really signifies our limitedness.... The reason I've lasted at this is that there's no new world to go to. I guess I'm working for the day when I can put myself out of work.
Exactly four months after getting 850 proposals on November 21, 1977, California OAT recommended that DOE fund 85 for a total of just over $1 million. But DOE told them they’d only get to give away $200,000, or enough to fund only the top 16 to 20 small grants ideas.

Recently, however, OAT announced that DOE will allow $650,000 to be expended on California projects, so that nearly 60 of the best can be done. A list of the winning proposals is available from OAT Energy Grants Program, 1350 10th St., Sacramento, CA 95814. Negotiations on the contracts will begin soon, and most projects will be underway by early May.

Although the second round of the DOE small grants program will start in September 1978, additional money will be provided this time by the state, if a bill recently introduced passes. State Senator John Dunlap’s bill SB 1831 would allocate $2.5 million in fiscal 1979 for an energy technology innovation program that resembles the federal pilot program, but offers more financial and technical assistance. If you’re a Californian, write your local Assemblyman and State Senator urging them to co-sign and support it. If you’re not, then why not get a copy of SB 1831 from OAT and get something similar started in your state.

Oregon’s considering such a bill also, and I’ll be there in Salem lobbying hard for it! For details, or to speak in support of it, contact: Margery Harris, Conservation, Oregon Dept. of Energy, 111 Labor & Industries Bldg., Salem, OR 97310.

Powers of One continued

Until then, the balance of things keep me involved.”

Part of that balance comes from working in other arenas of action. Forelaws on Board, for example, has another full-time intercessor now, Eric Stashon, working on the Skagit nuclear power plant hearings in Washington. And now it is spearheading an initiative effort seeking an outright ban on any nuclear power plants being operated or constructed anywhere in the state, as well as on the storage or transportation of nuclear wastes and fuels. This is much more point blank than the earlier safeguards effort attempted in Oregon in 1976 and, seemingly, in an extreme position for someone so accustomed to the granting subtleties of working through licensing and regulatory processes. But, perhaps not. Lloyd Marbet believes that, ultimately, an outright ban is the only real alternative to the current strategies for defeating the nuclear industry.

There’s a false sense of security, for example, in thinking that the nuclear dinosaur is dying and ready to cave in. He has seen the utilities in action too long. Lloyd says, to know that reving on such a hope is very dangerous. On the other hand, he’s leery of the disaster mentality that concludes we need only wait for the first serious nuclear accident, at which time the public will finally respond. This is, pure and simple, an obstruction process to social change. If any posturing will destroy the opportunity that we have to be responsible for this moment of time that we share together, it is such an attitude.

Instead, enough information has been coming in now to enable the voter in Oregon to say with confidence: “NO. There is an alternative!” Of course, with this increase in public awareness, there are also other strategies for bypassing the nuclear option. Coordinating all these efforts for the maximum effectiveness is difficult. While emphasizing that he does not own the nuclear issue, Lloyd is nevertheless anxious to see Forelaws’ initiative get on the ballot. In the meantime, he has plenty of work to keep him busy.

Don’t misread Lloyd Marbet: because of the nature of his work, say his friends, Lloyd’s not just some “anti” type person, immersed in the negativity of the issue with which he’s dealing. He’s a positive force, a believer in local control, and people taking responsibility for their own lives and their futures. His efforts spell difficulty for all the heavy-handed, overly-centralized systems that interlock with the elitist and oppressive tendencies of nuclear power. What’s more, Lloyd is a true believer in intergenerational equity—the fact that eyes of the future are upon us, waiting to see if we can rally our sense of limitlessness in dealing with this very limited, very crucial piece of time that we call our own.

Lloyd puts it a little differently: “I know now I’m not the grand finale... I’m just a part of the flow. There’s no such thing as glory in making a difference.”

—Steven Ames

FORELAWS FOR THE SOLO ACTIVIST

Whether a part of a large organization or working in more intimate ways to effect changes, we can all use some good advice on how to go about it. Lloyd Marbet’s experience as a solo activist has given him a lot of insight into how to find the right role for the right time. And how to stick with it. For those of you striking out on your own, his words are well taken. But don’t forget, there are a lot of you out there!

—Get a good push from someone you respect and admire.
—Have friends who will lend their support and assistance, especially at critical times.
—Do those things which you can best do in the here and now.
—Be willing to change the rest of your life.

Any other suggestions from our readers? —SA
Dear Mr. Kaspar:

Seven peer reviewers, three technical reviewers, and the three Office of Appropriate Technology people involved in the grants program met in Sacramento on February 14 and 15.

Of the 370 proposals reviewed by the peer panel, more than 100 were discussed during the two-day session. A third of those, totaling over $350,000 in requested funds, were ranked as the very best.

In the course of the discussion, several issues relating to this program were raised and debated. A strong and clear consensus emerged on a number of them. The group agreed that communicating the basic resolutions to you would substantially enhance the design and operation of this program in the future.

Three categories encompass the main points:
1. Intended recipients
2. Salary guidelines
3. Dissemination of project results

1. Intended Recipients

The prospective applicants should have the benefit of a clear statement specifying for whom this program exists. The first program announcement did not provide such information.

The limited funds should go to those people who have little or no access to venture capital: individual inventors, small businesses, and community groups rather than corporations and think tanks. Of course there will be exceptional cases, but generally this characteristic became in practice an eligibility requirement.

Therefore, those with ties to large laboratories, university money, and other funding sources should not anticipate using this program to finance their activities.

The venture capital aspect of the requirement should be emphasized along with the lack-of-access criterion. For example, capital improvements to businesses and private home-building, even at its most ingenious, will not be funded. Similarly, college and university students should be forewarned that the government is not going to pay them to do the kind of research which is traditionally done towards a degree.

Apparently it is necessary to state that DOE will not be subsidizing anyone's efforts to become familiar with the state-of-the-art as available in existing literature.

A better self-selection would occur if the $30,000-$50,000 range were presented as the exceptional portion of the spectrum. Most of our highest-ranking proposals requested funds under $10,000.

Towards this end of revealing the perspective of the grantor, the technical and peer review evaluation forms or criteria should be included in the announcement/application pamphlet. Perhaps a briefly annotated list of projects already funded would also clarify the thrust of the program and identify the state-of-the-art. A caution to branch out from such projects may be necessary.

Directions and guidelines for proposal writers to help them prepare a sufficiently developed and detailed proposal are necessary. Too many of the proposals contained vague ideas instead of specific intentions. We have already forwarded our suggestions on this to SAN.

2. Salary Guidelines

Inclusion of salary guidelines is a crucial part of informing the public of the nature of this program.

Our review team was unsympathetic to salary rates greater than $10-15 an hour ($20,000-$33,000 a year). Even that seemed unacceptable when an advance waiver for patent rights was requested. When the project would largely improve the applicant's own property, only expenses and materials costs should be allowed.

There were dismaying patterns of large salary disparities in husband-wife, professor-student, and professional-layperson teams. Ultimate project responsibility may be reflected in differences in pay. We faced too many instances, however, of budget allocations totally inconsistent with principles of an appropriate technology consciousness.

3. Dissemination of Results

We are very concerned that this does not become one more program in which the grantee receives a check and a year later hands over a final report which reaches only a select few. Public access to the process of experimentation and learning that occurs is vital.

The benefits of these projects will obviously multiply with the audience reached. Furthermore, widespread reporting will inform future applicants of what we are seeking and should consequently enhance the quality of the next round of proposals. Some applicants indicated plans to develop publishable data and designs. Most, however, do not have the special skills required to present the information in a pleasing and accessible manner.

One would expect a program such as this to extend to the compilation and dissemination of results of the funded projects. To ask the right questions and edit the answers, even to three or four pages per project, is a major undertaking. If it can be done well, though, it may be the single most important aspect in getting an idea into the marketplace.

4. Other Comments

a) It may be worth dedicating a portion of the grant funds to draw attention and effort to specific gaps in appropriate energy technology development. If so, the announcement/application pamphlet would be the place to indicate the targeted areas.

b) The completed technical review was a valuable tool to the peer reviewers; without it their job would have been longer, murkier and no more independent.

c) It would help to know how much room for negotiation is in fact available. Not too infrequently a proposal could be significantly upgraded by a budget change, a systems component substitution, or a link-up with another proposer. The most opportune time and method to consider such changes may be during the review process. Therefore, the negotiating process should be flexible enough to allow reviewers to communicate with applicants.

d) The Office of Appropriate Technology should have an opportunity to review the letter of rejection before it is mailed by SAN to the unsuccessful applicants.

e) The review procedure can be better structured to allow time to process the proposals if we know the amount of funds available. The possible last minute tripling (or more) of the money has caused some unnecessary difficulty.

Respectfully,

Robert L. Judd, Jr.
Director
Office of Appropriate Technology
RICH TECH/POOR TECH?

At a recent gathering of a.t. people in Oregon I noticed an immediate uncomfortable shifting in seats when the question of a.t. and poor people was brought up. I've noticed similar uneasiness surfacing whenever people haven't quite had a chance to sort out their ideas on a potentially sticky subject. It is also often related to residual (or active) feelings of guilt. Why do we get so defensive about the relationships between alternative technologies and the low income? Perhaps it is time to open up the proverbial Pandora's Box for discussion.

Since my own evolution into working on RAIN and a.t. issues in general comes from an early involvement in urban ghettos in the '60s, it's a problem that has been part of my consciousness for as long as I remember. I am hardly alone in expressing the feeling that I had begun to feel distinctly uncomfortable working within that milieu both because I wasn't black in the days when that was becoming increasingly important and because I had seriously begun to doubt whether I had anything more than bandaids and good intentions to offer. This was true even in the days when I was working with community design centers making available architects' and planners' services to design day care centers and to fight urban renewal. At least then we were offering a service that people had requested and obviously needed, yet it always felt like we were only doing cosmetic work. Even when we were successful in helping to block a freeway expansion into a neighborhood, the sense of power that we generated in the area was always shortlived compared to the debilitating powerlessness caused by the welfare system and the lack of jobs. I always felt that we were learning and growing more than the people we were trying to help.

And so I, like many other people at the time, removed myself more and more to dig into my own head and to learn new skills in what I thought was a totally different direction. I have a strong memory of a mentor of mine speaking scornfully of students who were beginning to get into ecology. His implication was that the problems of the earth were cop-out, middle-class stuff compared to the life and death issues of war have any relevance to the hungry children the Black Panthers were trying to feed? Thus when I began the shift away from direct anti-poverty work I felt a twinge of guilt that maybe I was only moving on to something that was easier for me than struggling to make a difference in that alien world.

Our sense of the problems was so fragmented in those days. We didn't see that the degradation of the farmer's life and the move towards large-scale agribusiness was a major part of the reason the blacks and poor whites were pushed into the cities in the first place. We hadn't yet documented the connection between the corporation's push for bigger and bigger profits, the exploitation of poor people all over the world, and the exploitation of our diminishing resources. It had not even dawned on us that our resources were diminishing. It has taken a long time for us to fully realize that the costs of pollution, increased mechanization and higher priced energy would most hurt those who can least afford it. The poor get it coming and going as prices rise and unemployment worsens.

I should have known that things would be coming full circle. We are only just now beginning to realize that the skills and information we have been developing over the past five or six years are more than ever directly relevant to the problems of the poor. Work on solar collectors, urban gardens and credit unions along with the documentation of corporate rip-offs can be an important means for beginning to shift the balances of power that have held the majority of the poor in their place for so long.

The realization of these connections has recently been coming from within both the a.t. world and the more traditional anti-poverty circles. But viable and productive relations between haven't always been (and still aren't always) possible. Since much of the research and proselytizing of alternative technologies of all kinds has been done by predominantly white, upper middle class long-hairs and former long-hairs, it has had a kind of unreal, hippy/back-to-the-land appeal that has turned off most of the urban, real poor (as opposed to the voluntary poor).

Helga Olkowski tells a story of proudly pulling together a group of community action people on the first NCAT Board to watch the Canadian National Film Board's movie on the New Alchemists. She thought this would really pull the ideas together for them and was horrified when they furiously demanded to know what relevance all those hippies running
around without much on and tinkering with odd-looking machines had to do with their problems. There is also the example of Karl Hess’s experiment in the Adams-Morgan area of Washington, DC, where a group of people were experimenting with urban-related appropriate technologies in an old warehouse. Despite their best efforts to include their neighbors, the weekly meetings were attended by other experimenters from all over the country but were largely ignored (or even ripped off) by the local people to whom the work was meant to be aimed. Karl has recently written that this was in part due to the fact that most of the poor in the neighborhood had grown used to the handout mentality of government programs and were not interested in tackling the hard work of attempting self-reliance. (For an interesting discussion of his perspectives on the project, read his article, “Flight from Freedom” in the Sept./Oct. issue of Quest/77, available for $2 from: Ambassador International Cultural Foundation, 300 West Green Street, Pasadena, CA 91129).

However, as efforts like the National Center for Appropriate Technology (which is firmly out of the anti-poverty world) have shown, the time has come when it is clear that technologies and processes supporting self-reliance and local control have far more universal applications than either poor blacks or hippies. And as so often happens when the time is right, there are people from both worlds who are beginning to bridge those gaps.

Apparently we’ve all done a good deal of learning and growing during the five or six years that have transpired. I know why the technology is being developed, but I am not at all clear about the dynamics of the changes within the communities. Perhaps ethnic awareness has begun to generate the strength and authority within the community to be able to achieve the first steps of control and knowledge on their own. Perhaps the barely noticed and rarely thanked work of the tireless organizers who did stay is beginning to pay off.
At any rate, as they reach out there are increasingly beginning to be people at hand with useful skills and knowledge to apply. The examples are numerous and heartening:

- Louise Howard in Illinois has pulled together a successful rural community garden and cooperative cannery in one of those huge housing projects. She started the program on her own but is beginning to work with the Midwest Alternative Energy Network/Acorn people to help teach farming to Chicago city kids.

- At 519 East 11th Street in Manhattan, local blacks and Chicanos began to rehabilitate and solar- and wind-retrofit an abandoned tenement building with the help of an alternative energy architect and Community Service Administration funds. Sweat equity at its best. (See “Wind” entries this issue.)
- At the request of low-income groups first in New Mexico and now all over, Bill Yanda has been doing workshops to teach the building of simple solar greenhouses that will help heat homes and grow food.

- Utility rate organizing in various parts of the country is allowing poor communities to stand up against rates that (as usual) discriminate against low income users in favor of corporations.

- Several years ago Eugene and Sandi Eccli put together that excellent booklet for the then Office of Economic Opportunity called Save Energy, Save Money—it was geared towards poor people but it was useful for anyone.

These examples also extend into the Third World. The Intermediate Technology Development Group in Britain and Volunteers in Technical Assistance in the U.S. (among others) have been showing that if asked by local groups, whether in Guatemala or Sri Lanka, the technical creativity is relatively easily mustered to develop tools and processes that are appropriate for particular situations.

Okay, then, why is there still that uneasiness when the topic is raised of applying appropriate technologies in poor communities? I think a lot of it comes from the still relatively undisputed issue of the "voluntary" poor. Some of the "poorocrats" seem particularly bothered by this issue and are quick to discount the experiences of those who have chosen to live on less. Having done very well for themselves running government programs that treat symptoms rather than the real problems of the poor, they now seem to feel threatened by the low salaries and high expectations of the "have nots." But, as energy prices rise we all have to spend a vast amount of our money on heat and electricity—community and/or individual based alternative energy systems in conjunction with utility rate reform can go a long way towards easing that squeeze on already empty pocketbooks.

- People need personal and community power—the research done by the Institute for Local Self-Reliance and others into the dynamics of neighborhood economics and the organizing work by groups such as ACORN can be applied to most any community to begin to bring the powerbase back to the people who live and work there. At the same time, collective, worker-controlled, or at least small-scale (even home-based) working situations can begin to bring a sense of power and well-being back into individual lives.

The thrust of the government programs has been to bring the poor into the mainstream of American life by raising their incomes and expectations to match those of the middle class. It is part and parcel of the assumption that there is a huge pie to be shared and the poor and rich can have bigger and bigger pieces. On the contrary, the pie is getting smaller, and if there is to be anything left for the poor, the more fortunate of our society must learn to live on less.

Unquestionably many of us who are conveying these messages and experimenting on the enabling technology are speaking, by and large, from a position of privilege. Most of us come from the "haves" rather than the "have nots." But, we know the problems and unfulfilled promises of having oversized slices of the pie and are pleased by the results of our efforts to learn to live more lightly.

The key here seems to be that we—as educated, relatively well-off do-gooders—can't shove our ideals or our experiments off onto poor communities, urban or rural. We cannot really know their problems or their constraints. But given particular situations and an invitation, there is a lot we have to offer.

- Anyone living on a limited income needs cheap food—roof-top gardening and organic pest control techniques as demonstrated by Farallones Institute and the Institute for Local Self-Reliance in urban situations can help. So can solar greenhouses if they are cheaply and easily constructed.

- As energy prices rise we all have to spend a vast amount of our money on heat and electricity—community and/or individual based alternative energy systems in conjunction with utility rate reform can go a long way towards easing that squeeze on already empty pocketbooks.

We are not talking here about second class technology or second class lifestyles. We are talking about the generation of skills and living patterns that we as drop-outs from middle class values are proud of and which we are convinced have relevancy to traditionally low-income people as well. We may be voluntarily poor and as such have the education and self-esteem to back us up, but we are using those skills to develop ways of living and working that are appropriate to low-budget, low energy conditions.

What we have learned has been of value to us, and we are slowly beginning to apply it in our own lives (as we work the bugs out). We have long known that the ways were good for the conditions we are moving into, but we haven't been about to sell them to anyone else until we are using them in our own lives.

For those of us interested in getting these technologies and working patterns to those who need it, the task is to make the information available. The people in poor communities must be able to lay their hands easily on the ideas when they reach out for them, as they are increasingly doing.

—Lane de Moll
Connecticut Bottle Bill Passed
The Connecticut General Assembly passed a bottle bill on March 31 which requires a 5¢ deposit on all beer and soft drink containers beginning January 1980. The bill also bans cans with flip-top openings. Gov. Ella T. Grasso has indicated she will sign the bill. Deposits on beverage containers are mandated by law in Maine, Michigan, Oregon and Vermont. Other states have laws banning pull-tabs or imposing levies on beverage containers. —LJ

Project SORT (Separation of Office & Residential Trash), for more information contact:
Terry W. Conner, Project Manager
Rm. 101, Courthouse Annex
San Luis Obispo, CA 93401
A voluntary solid waste collection/recycling program in this city achieved a 65 percent participation rate in the first six months of its residential operation (April-Sept. 1977). 5200 of the town's 8000 households took part in home separation and curbside collection for old newspapers, bottles, jars and cans. SORT is also handling an office paper recycling program involving some 1500 workers in 21 office buildings occupied by both private firms and government agencies. As a result, over 2-1/2 tons of high-grade paper is recycled per week. —LJ


Down to Earth—City Living, produced and directed by Joaquin Padro, 1977. 18 minutes, color. Sale: $250. Rent: $30. Available from: Pyramid Films Box 1048 Santa Monica, CA 90406

At a time when the typical urban household is consuming enormous amounts of energy and generating large quantities of waste, the Integral Urban House in Berkeley exists as a demonstration of the practical alternatives to this destructive cycle. Steve Greenberg has produced a film which examines the life-support systems that have made this home more self-reliant and reduced its negative impact on the environment (solar capture, waste recycling, food production). This film, A City Farmstead, is a nice introduction to the people and ideas from which the Urban House evolved and the possibilities and implications it demonstrates for more livable cities. Another film, Down-To-Earth—City Living has also been done by Joaquin Padro about the Integral Urban House, but its scope, perspective and overall quality is not nearly as good as A City Farmstead in giving an accurate understanding of what is happening there. I am compiling a list of the best a.t. related films now available. If anyone has any suggestions (especially of more obscure films), please let me know. Muchas gracias! —JM

Windmill Power for City People: A Documentation of the First Urban Wind Energy System, by Energy Task Force, NYC, CSA Pamphlet 6143-8, Sept. 1977, $3.00 from:
U.S. Govt. Printing Office
Washington, DC 20402
If you're considering a city or suburban wind system, then this is an excellent starting point. Covers zoning, structural calculation, public utility commission regulations and tariffs, as well as basic windpower theory and practice, in language easily understood by most people. Lots of clear drawings, schematics. Very well done by the people who installed a 2kw Jacobs wind-electric system atop the housing cooperative at 519 E. 11th St. in New York City. —LJ

Trucklets, Vanlets, Where Are You? Vans have been getting a lot of environmental flack lately because of their poor gas mileage (true). Vans and pick-ups shouldn't be exempt from gas mileage regulations, but cans in particular have a lot of versatility that is quite valuable. I often claim a greater people/mpg and cargo/mpg than other vehicles and claim that my van gets better mileage than any other home I've lived in. The real kicker to me is why mini-vans aren't available in this country. We've heard rumors that GM is coming out with a VW bus sized van, but haven't been able to track that down. The VW is overpriced and underpowered, no "stripped" model is available, and it lacks versatility because of the engine location in the cargo space. Toyota, Datsun and several other companies have for years made small, economical, versatile front-engine vans that are a real delight—but you can't buy one in the U.S. We were told that Datsun imported two of them into L.A. (our big-is-better capital) in 1974, then shipped them back to Japan. What's going on? When are we going to be able to buy an inexpensive, gas-saving people and cargo carrying basic vehicle? —TB
We woke up that morning early and happy, and lay in bed tasting the first sweet fruits of leisure after a long job finally done. The night before we had finished the last painful task of sanding and oiling the floors of the house we had spent every moment and ounce of energy over the last seven months building. The bone-weary two-hour drive back to Portland for a bath, collapse into bed and dreams of the next morning’s final trip with our belongings out to the house were behind us. The phone interrupted our pleasant musings. It was Kip. Our house had burned down.

No. It can’t be. We were just there twelve hours ago. It was fine. It was solid. It was beautiful. It couldn’t just vanish like that. The house has burned up. All of it? Some of the walls are still there, but it’s a total loss. What caused it? They don’t know.

What has gone haywire with our world? Fred, our neighbor and dear friend on the mountain dies suddenly on the way back to our house in Portland. Now, exactly a month later, our house burns down—the morning after we finish it. No reason, no cause, just gone. Get to the end. Don’t take a breath. Go back to ground zero. Now we know how Sisyphus feels. What next?

How do you feel when you’re bone-weary and just sitting down and someone kicks the chair out from under you? Cheated? Bewildered? Exhausted. Sometimes you decide to just lay there a while until you can get the energy to get up. Numbness is a blessing. It keeps the pain away until you can find the strength to deal with it. How do you feel? Numb. In a strange way, lighter and freer. You feel somehow the release of those bonds that each of your possessions has on you. You have unexpectedly the opportunity and responsibility to rethink a lot of things and remake a lot of choices. You really have to begin again. Seven and a half months of our lives—gone—up in smoke. It’s not until much later that we really realize that it’s no different from any other seven and a half months of our lives, which are equally as gone, yet with fewer satisfactions and rewards. Maybe it’s the sense of having to repeat it that weighs most heavily. All that work and all that love—but now just a rerun. Hopefully we can find ways to turn the rebuilding into a new and also rewarding experience.

We follow a logging truck most of the long drive out to the coast. There are rainbows in the spray from its wheels leading us on. Bizarre, but somehow comforting. On the way we think of the things that were there, and say goodbye to each. What things we later pull from the ashes intact have become gifts, and will be greeted with cheers as well as tears.

We finally start up the last stretch of road and brace ourselves for what floodgates the reality of the charred bulk will open. It doesn’t. Still numb. Kip and Amy meet us. They had to watch it burn—to see Kip’s beautiful shingling turn to smoke and be sucked up into the cloud capping the mountain. At least they burned well. Where do you get the strength to pick around in the ashes of a newborn child you have just brought into this world through long months of loving labor? Where do you get the strength to look at the left-behind body of a dear friend? Sometimes you don’t have the strength, but those things don’t go away. They just wait there until somehow or somewhere you do find the strength. You have to, somewhere.

It’s hard, but good. Death, tragedy and loss are all parts of life that our society does its best to hide, cushion, mask or deny. You read of tragedies every day in the papers, but it’s just the statistics, the outer carcase of what happened. No sense of how people’s lives were affected, no sense of what it meant or felt or changed. An always distant-kept, abstract thing. Those realities, though difficult, add some sort of completeness to our lives, and knowing that we have the strength to deal with such things and that we grow through the process is a strength in itself.

We hear a truck racing up the road and turn to see a pickup charging in the driveway. They see us, slam on their brakes and back down the road as fast as they came. Looters. My blood boils. Kip says the firecrew warned him to stay at the house just because of that. There had been several others.
It is strange walking through something so transformed, strange what you latch onto, what brings laughter among the tears and pain. Light bulbs melted into taffy. A dozen now well-cooked eggs on the kitchen floor. Beans starting to sprout on the charred kitchen counter. Pages of a Doonesbury book blowing about in the breeze. Broken glass by the bushel. Blobs of aluminum, melted off the foil-faced insulation. Vibrant technicolor views of the world going on about its business, framed in the black velvet mask of char. Everything is black. Beautiful patterns of charred wood. The stench of a smoldering mattress. The wood stove—proud, intact, already rusting. Two cords of firewood, now pre-masticated. The detective games begin—what in the world was this?

Lane finds the charred remnants of a jewelry box under a piece of now ghostly white insulation. Inside, her great grandmother’s face stares up at her from a locket. We find a patch of golden, untouched floorboards only two feet from the center of the fire, and discover that the solder on a water pipe had melted, pouring water right into the middle of the fire. Poor house—it did its best to save itself.

Our new neighbors arrive and help us load what we could salvage into our truck. We joke because one of the things we went back to Portland for was a smoke detector—but it wouldn’t have helped, only burned up like everything else. We apologize for the sad state of our housewarming. What else can you say? The neighbors are wonderful—arriving with pots of stew, offers of houses to stay in, help in getting our property taxes adjusted—but mostly to share with us and bring the knowledge that they are there for help if we need it.

In a small town things are more tightly connected—for better or worse. The head of the fire crew had delivered the concrete for our foundations, and we talk about the fire later while pouring the floor to finish the garage that Fred was building when he died. Somehow that helps. The mayor, the owner of the local lumberyard, the people who installed the water main all helped put out the fire. People offer to help us clean up the debris.

That night the more difficult learning begins. With darkness our vulnerability becomes more visible. That thin veil of predictableness that usually shields us from the writhing chaos of creation and destruction has twice been rent asunder. No longer can we consider ourselves immune—unfathomable events are no longer something that happen to someone else. Unanswered questions, the conjurings of battered and exhausted minds, keep us awake. We sleep with our clothes on, and as close to the ground as we can.

Any sense that we understood what happened was shattered some weeks after the fire while we were spending an evening with friends recently moved to Oregon from Philadelphia. Well into the evening Pauline hesitates, then announces that she had had a vision six months before that our house would burn—on February 8—but that we would be all right. She didn’t know of our new house and thought it was the Rainhouse, but had written it all down in her journal.

As with Fred’s death, we found that sharing our experience with others really helped. Their reactions, shared fears, and past experiences all helped make more whole our own. We discovered that many of us have a common “homecoming fear”—that turning that last corner we would discover our home burned, ransacked or recipient of some other dreadful quirk of fate. We did, and we’re okay, and we know that fear will never have the same hold on us again. We learn of cancer victims who have been abandoned by all their friends who don’t know how to deal with sickness and death. We remember the same feelings in ourselves, and know now that the best thing is to plunge in, be honest that we don’t know what to do or say, and a good way will open. There’s no right way.

Amy felt that our losing our house was as bad as her losing her husband. We said no—the house was only an object, and could be rebuilt. She said yes—but her life could be rebuilt, too. We have all been more able to let out our fears of death, of losing each other, and that release seems to lessen them. We are learning to appreciate and enjoy what is part of our lives while it is there and not put off for tomorrow. We’ve learned more forcefully of the impermanence of all things. A house built to last a lifetime lasts but a single night. Will we build so carefully again? No. More carefully. We’ve learned that the best we have is the capacities that we carry within us and the love we can share. All else grows out of that and pales beside it.

We’ve discovered that we only want valued things around us—things that are attachments, that attach us through associations, memories and love to the people, places and events that give meaning to our lives.

We’ve become more thoughtful about acquiring things. Although we had some insurance which will help us rebuild, we know that the real insurance—the generosity and love of friends, family, neighbors and community—are there if needed. Although we were taught to be self-reliant growing up, we’ve learned that voluntary dependence, being able to receive, and the value of giving to both the giver and recipient are often of greater value than struggling through alone. We feel stronger, older and more humble.

A week after the fire we began to plant trees. Somehow, carrying those green, fragile, living things through the black charred ashes began to make it all right. We tried to tear the hulk down this weekend and begin again. We couldn’t do it yet, but we will, soon.

More amazing things happen. Marcia sends out a package of things she thought we might need. Without knowing what we’d lost, she sends wonderful replacements for many of our most cherished things. Mary Jo gives Lane a white sweater she just knitted for herself—not knowing that Lane’s favorite white sweater burned up. People we’d just met once knock on the door and give us an envelope with $50. Amy gives me some of Fred’s clothes. It’s good wearing our friends. Somehow the people level is so much more meaningful than the institutional one that is such a poor substitute for love and caring and sharing and understanding and helping and being vulnerable just like us.
The Department of Energy has funded several studies called Wind Energy Mission Analyses since 1975. One such contract went to the Lockheed-California Co., where Ugo Coty and Michael Dubey, the principal investigators, were aided by researcher Don Bain. He has since been awarded an AT & T Energy grant to assess the residential market for small wind-electric systems and the potential job impact of that market in California. Other wind energy articles by Don, based on the Lockheed report, may be found in recent issues of Wind Power Digest ($6/yr. for 4 issues from WPD, American Wind Energy Association, 54468 CR 31, Bristol, IN 46507). —LJ

According to Lockheed's Wind Energy Mission Analysis1 for the DOE, there could be significant impacts on the national economy resulting from the implementation of wind power on a large scale. Not only will aerospace firms and large construction outfits benefit, but so will the thousands of small firms needed to sell, service and install wind energy conversion systems (WECS) in the 1 to 50-kW range. The manufacture of these small machines, of which a potential market of at least 60,620 to 186,640 units could exist by 1980, is ideally suited for small- to medium-size firms. Highly sophisticated technologies and skills are not needed to produce these smaller WECS. As a result, many small businesses, outside of the major cities, could thrive on the small WECS market that could expand to approximately 3,029,900 to 18,837,300 installed units by 1995. Even the realization of just a quarter of this potential would put a lot of people to work in regional businesses. Those who are willing to scour the countryside for a beat-up WECS that has to be rebuilt before it is usable, and others who are making their own from scratch in the garage really represent the tip of the iceberg yet to come.

The other end of the WECS size spectrum is represented by the large, 1 to 4 MW, machines and the institutions capable of supplying them en masse. The potential utility market for these giants, 175 to 360 feet in diameter, could expand to 78,800 wind-turbine generators (WTGs) in place by 1995 depending on fuel cost and electric demand. Already, an economically competitive market for WECS exists for use by electric utility systems having both hydroelectric facilities for storage and windy sites. The Bonneville Power Administration (BPA, now part of DOE) is a good example. There are many sufficiently windy sites with close tie-in to the extensive BPA grid, and they have extensive hydro-storage capability. As a representative of BPA has said, "We would use them if we could get 'em." Since DOE has a wind energy program that has as some of its goals the commercialization and use of WECS, where are the units for a practical, full-sized demonstration program? The large industries needed for utility-size WECS production apparently do not have at their heads people with sufficient leadership and foresight to direct some of their manufacturing capacity to be converted to WECS production without some form of federal assistance.
Institutional Problems

The posture of the electric utilities on WECS is conservative and skeptical, and industry-based associations like the Electric Power Research Institute (EPRI) and the Edison Electric Institute (EEI) are hardly encouraging their implementation. However, there are a few mavericks in the industry, as evidenced by the over 60 utilities that responded to Request for Proposals (from the DOE) to have government-bought demonstration WECS hooked into their electric grids. But it is uncertain that the current demonstration WECS are realistic prototypes of commercial models likely to be offered in the future. Without a national survey of sites where utilities would actually place WECS, it is unlikely that the demonstration units would be the most efficient or economical prototypes for a commercial market. The resulting delay in the use of large WECS will allow the continued consumption of massive amounts of fossil fuel without the fuel saving benefits of larger WECS in the utility grid. Meanwhile, the more responsive small WECS industry has begun to expand due to increased demand for these units. Even if the farm and residential markets were saturated with small WECS, the large utility WECS could still supply an additional 10.5 to 15.2 percent of the national electric energy demand in 1995.

It would seem reasonable then for DOE to place quantity orders for large WECS to be used by the federal power agencies such as BPA, TVA or the Bureau of Reclamation. That would cause mass production lines to be started up immediately. The resulting effect would be WECS that are priced competitively enough to entice public and private utility orders. Operating experience and implementation capability would be developed within DOE to assist interested utilities.

Given the existing potential market and need for WECS, the present DOE wind program is not scaled to the level of national benefits resulting from the use of wind power. Why? Scrutiny of DOE policy reveals that the commitment to wind energy is minimal as evidenced by the level of monetary support. The present federal program is less than the "business as usual" (BAU) case for wind power described in the FPA Project Independence Report of 1974. Since then, oil has become considerably more expensive than $7 or $11 per barrel. Recent energy cost and performance studies have shown that the 1 MW WECS (in Ref. 3) energy cost is too high and its performance too low. In spite of these and other developments, the Federal Wind Energy Program has not been upgraded or expanded to even the BAU level. The comments about wind energy in a recent ERDA report describing government policy and goals demonstrated a poor understanding of the technological and economic considerations of wind energy. Today, with all the new information available (most of it paid for by ERDA/DOE), the federal wind program needs to be reevaluated. Evidently, those at the top in DOE who formulate policy and who lobby for program support are still grossly misinformed or uninformed about wind energy. So far, the cost effectiveness of the accomplishments of private enterprise in the construction and operation of WECS, here and abroad, far exceeds that of the Federal Wind Program.

The Impacts of Production

What if, somehow, orders for large WECS were placed and industry tooled up for mass production? This question was addressed in depth in the Mission Analysis. Given the maximum 1995 potential market, a scenario was constructed which assumed that industry would gear up for a rate of production and installation that could be sustained for at least five years, or not more than 8100 WECS/yr. A model was made taking into account labor and material quantities and costs. The manufacturer of the Mod O blades at Lockheed provided some empirical data for the model. Since it takes approximately 20 months to make a WTG, from mining the ore to its completed erection on site, production was assumed to begin in mid-1978 with the first deliveries of 100 units in 1980. Thereafter, the annual delivery rate would be 500, 1000, 2000, 4000, 6000, to a peak rate of 8100 units per year in 1986.

Thirteen WECS designs were analyzed for what it would take to construct them. The cost model provided labor hours, and material costs and quantities. Three of these exemplary units are shown in Table 1. At the average wind speeds given (V in m/sec.) the diameters are 280, 417 and 367 feet, left to right. For the 4 MW, 7 m/s WECS, the weight breakdown of materials is 49.5% concrete, 48% steel, 1.8% aluminum and .7% copper. At 8100 WECS/yr, production of basic materials would have to increase, copper wire by 2.5%, aluminum sheet 1.8% and steel 1.5%. The production of steel castings would also rise by 48%, and this represents the only possible bottleneck in the materials supply. If less than 8100 WECS/yr are produced, then all the results reported here can be adjusted proportionately.
Net Energy

An analysis of the energy required to create the WECS components is also summarized in Table 1. The total represents all the energy, in kWh equivalent, consumed to make the WECS, from mine shaft to readiness for the first breeze. This includes all the energy consumed in the mining, smelting, alloying, processing, transporting, machining, finishing and fabricating the various component parts. This also includes the energy in the explosives, fuels used, chemicals, electric power and electrode consumption. All transportation of the goods by grader, tractor, conveyor, barge, railroad and truck is included. For example, the diesel truck transport is at the rate of .7 kWh/ton-mile. All of the energy consumed was converted to kWh for comparison and includes losses and inefficiencies in the machinery and processes. Transport to the site, site and foundation preparation, and final erection of the prefabricated components are all included in the energy cost.

The energy cost analysis indicates that, to make them, large WECS consume 4.8 to 7 kWh per installed pound. The segmented aluminum blades are the most energy intensive components at 26.7 to 30.7 kWh/lb. The fabrication energy cost is calculated as a percentage of the material's energy basis by weight. For the turbine/generator components, it is 34.6%, tower 25% and foundation 17.3%. While the components would have to be hauled hundreds of miles from the manufacturer, the foundation materials could be obtained nearby using local contract construction firms. The total energy cost of various WECS designed for different wind environments is shown in Figure 1.

When compared to the output of a WECS over its projected 30-year life, the resulting energy pay-back ratio is 48 to 1! It takes just 7-1/2 months for a 4 MW, 367" diameter WECS operating in a wind environment averaging 7 m/s to return all the energy used to make it! Even at a WECS capacity factor of .2 at a low wind speed site, the ratio is 18:1. The WECS rating and the mean wind speed have considerable effect on the pay-back ratio. Going from a 1 MW to a 4 MW WECS results in a 40 to 50% energy pay-back ratio improvement, while using sites where V=9 m/s instead of 5 m/s results in an approximately 70% improvement. The lowest pay-back ratio WECS design was the 1 MW, V=5 m/s unit at 23.4:1.

The cumulative national effect, of 100 units delivered in 1980 and rising thereafter to 8100 WECS/yr. in 1986, is shown in Figure 2. Four scenarios are illustrated with national electric demands rising at 6.5 and 4.4% per year and fossil fuel cost escalations of 10 and 4% per year for high and low respectively, starting in 1975. Note that in 1984, 7600 WECS would be in place generating 105.3 billion kWh. The resulting fuel savings would equal to 187 million barrels of oil in 1984 alone.

New Jobs

The production of large WECS affects the labor market, both in the manufacturing centers and at the regional level. The gearing up for production and delivery of 100 WECS in 1980 would employ approximately 80,000 people. As annual production and installation rose to 8000 units per year, the direct labor required would correspond to 645,900 people in the industries working on the WECS itself. For example, a 4 MW, \( V=7 \) m/s WECS would require about 159,500 direct labor hours. The heavy manufacturing would account for 89.4% of the direct labor, with the remainder of the effort being done at the regional and local level. Additional employment would also occur in the firms supplying the basic materials for the WECS construction, meteorological site investigation, utility electrical tie-in, and periodic maintenance. In the manufacturing industry, approximately 25% additional man-hours would be required for management and engineering support. The $17.8 billion dollars spent on 8100 WECS would filter down through the national economy increasing the level of income, of savings, and the consumption of unrelated goods and services.

Regional labor impacts resulting from the deployment of large WECS cover many occupations. The transportation of the WECS materials to the site would require the use of heavy trucking services. The concrete foundation would be constructed from locally available sand and gravel and with the services of local contract construction outfits. These same outfits would prepare the site by cutting roadways, excavation and finally erecting the WECS components. Local labor amounting to 16,900 direct man-hours would be expended on each unit installed. Accordingly, it would take 771 local crews of 50 each to install 8100 units in a year, a total of 38,550 jobs.

Table 1. Wind Turbine Generator (WTG) Component Breakdown

<table>
<thead>
<tr>
<th>WECS COMPONENT</th>
<th>1000 KW</th>
<th>2000 KW</th>
<th>4000 KW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( V = 5 )</td>
<td>( V = 6 )</td>
<td>( V = 7 )</td>
</tr>
<tr>
<td>WEIGHT-POUNDS</td>
<td>COST- KWH</td>
<td>WEIGHT- POUNDS</td>
<td>COST- KWH</td>
</tr>
<tr>
<td>TURBINE ASSEMBLY</td>
<td>49,077</td>
<td>1,322,587</td>
<td>26.9492</td>
</tr>
<tr>
<td>GEAR BOX</td>
<td>20,961</td>
<td>507,261</td>
<td>14.6857</td>
</tr>
<tr>
<td>GENERATOR</td>
<td>10,000</td>
<td>169,532</td>
<td>16.9532</td>
</tr>
<tr>
<td>ROTOR CONTROL</td>
<td>422</td>
<td>6,752</td>
<td>15.9360</td>
</tr>
<tr>
<td>OTHER TRANSMISSION</td>
<td>14,490</td>
<td>190,641</td>
<td>13.1567</td>
</tr>
<tr>
<td>PLATFORM ASSEMBLY</td>
<td>52,200</td>
<td>563,544</td>
<td>10.7959</td>
</tr>
<tr>
<td>YAAL CONTROL</td>
<td>23,300</td>
<td>351,922</td>
<td>15.1027</td>
</tr>
<tr>
<td>TOWER ASSEMBLY</td>
<td>148,246</td>
<td>1,491,040</td>
<td>10.0579</td>
</tr>
<tr>
<td>FOUNDATION AND EARTH MOVING</td>
<td>656,500</td>
<td>1,030,733</td>
<td>1.5724</td>
</tr>
<tr>
<td>TOTAL</td>
<td>974,196</td>
<td>5,433,955</td>
<td>1.854,693</td>
</tr>
</tbody>
</table>
The peak employment impacts in the allied industries would occur in 1986, the first year of production at the 8100 unit level. The affected industries would be contract construction, primary metals, metal fabrication, machinery, electrical equipment, transportation equipment, and miscellaneous manufacturing industries. The work force of these industries was projected to be 11.8 million in 1986. WECS production in that year would require a 5.48% increase in the direct labor force of the allied industries alone. A national WECS program at this rate would certainly put a dent in the unemployment levels that have been so hard to reduce without increasing the rate of inflation.

The criteria of net energy and employment impact have yet to be added to the regulations pertaining to the construction of new electrical generation capacity. What is future DOE policy going to be regarding these issues and when will these measures play an important part in the National Energy Plan? Until these and other criteria are part of the planning process, we will always have an "energy crisis" of one form or another.

References:


**FREEING OUR FORESTS**

Northwest Coalition for Alternatives to Pesticides  
P.O. Box 375  
Eugene, Oregon 97440

The use of herbicides in the forestry industry in the Pacific Northwest, as elsewhere, has long been rationalized by corporations, public land managers and local officials as indispensable to intensive forest management practices and essentially harmless to people living and working in the forest environment. However, a groundswell of public resentment over such indifference to the health and safety risks involved in herbicide use is now gaining momentum. It has become the foundation for a grassroots organizing effort hoping to effect some changes.

Last autumn a host of local groups concerned with herbicides ranging from Arcata, California, to the Olympic Peninsula came together to form the Northwest Coalition for Alternatives to Pesticides (NCAP). Seeking to function as a central location for information gathering and local input, NCAP has now incorporated, applied for tax-exempt status and is already formulating a coherent series of objectives for handling an issue whose scope is not yet known. NCAP hopes to document the fact that herbicide poisoning in this region is much more widespread than had even been expected.

The main source of concern has been the use of phenoxy herbicides (particularly “2,4,5-T” and Silvex) for site preparation and conifer release purposes in the forestry industry. These compounds both contain Dioxin (TCDD), which was a chemical component of “Agent Orange,” the infamous defoliant used for ecological purposes in Vietnam. There is no question that phenoxy herbicides contain PCDD, mutagenic and most likely carcinogenic; their persistence once released into the environment and their tendency to bio-accumulate have caused citizens exposed to them a great deal of alarm. Evidence beginning to be gathered is revealing the magnitude of the problem.

For example, crews from the Hoedads Reforestation Cooperative were recently working on a Coos Bay, Oregon, tree-planting contract let by the Bureau of Land Management (BLM). Fifteen people exhibited non-normal symptoms and evidence of herbicide poisoning. Of those 15 people, one woman suffered multiple symptoms of headaches, bleeding from the nose, gums and vagina, blood in stools and extreme fatigue. A blood sample was taken about 49 hours after her exposure; the results showed 5.5ppb of Silvex and under 5ppb of Krenite. Silvex had been sprayed in that area 10 months prior to her exposure; Krenite had been applied 6 months previously.

NCAP has taken several positions regarding herbicides and their use. These include:
- calling for a cessation of the use of “2,4,5-T” and Silvex on public land
- requesting all land managers to post notification of spraying areas 5 days in advance
- requesting the Environmental Protection Agency (EPA) to establish re-entry guidelines for people who work in the woods, taking into consideration reasonable amounts of time for chemicals to degrade.

NCAP is also involved in or monitoring several legal actions being taken in the region, ranging from charges of inadequate Environmental Impact Statements concerning herbicide use to the trial of 23 protesters who had attempted to prevent the aerial application of herbicides to a clear-cut area near 30 homes in the vicinity of Rose Lodge, Oregon. Many of these people had been directly and deliberately sprayed with the herbicide during their protest. Essentially, such legal tactics are delaying procedures until the wider public can be informed and educated on the issues at stake.

Along this line NCAP is working closely with people working and living in the region’s forest environment to gather anecdotal evidence of herbicide abuse. They are asking such people to check out the condition of wildlife, livestock and vegetation, looking for unusual signs of illness and other irregularities. These and obvious family health problems should be sent to NCAP or one of its local affiliates; NCAP has a form available that is helpful in this process. (For symptoms of Herbicide Abuse, see the enclosed box.) With this data NCAP hopes to determine the patterns in which herbicides are manifesting themselves in the environment and the pervasiveness of their impact.

NCAP is also investigating the economic alternatives to widespread herbicide use, such as manual brush control techniques. Such a labor-intensive option is not without similar precedents; a decade ago, many forestry companies were unwilling to switch from air-seeding techniques to the more people-oriented alternative of hand tree-planting. Today hand tree-planting is becoming more prevalent. In general, this sort of alternative implies a comprehensive reform of the entire system that manages, harvests and profits from the forest environment.

The most important leverage point for NCAP at present is increasing public awareness of the herbicide problem and encouraging their involvement. To that extent its network is a good beginning linking up the workers and local residents who have been most affected by herbicides. Through this network more information will be accumulated and cross-regional contacts will hopefully result in more effective long-term strategies. — Steven Ames

(Thanks to Fred Miller and Ann Tattersall of NCAP)

---

1. As a future project NCAP is interested in pursuing the connection between the use of Agent Orange in Vietnam and subsequent health and environmental impacts sustained by the Vietnamese people. Currently little is known about this subject. A cross-cultural sharing of information could expand the data on problems of phenoxy herbicide poisoning and help to build more positive relations between our two countries.

2. For more information on the protesters involved in the Rose Lodge incident, or contributions to their legal defense, write to Forestry Legal Fund, Rt. 1, Box 163, Otis, OR 97368.
Local Affiliates of the NCAP Network:

Groups for Organic Alternatives to Toxic Sprays (GOATS)
c/o NEC
1091 H. St.
Arcata, California 95521

South Oregon Citizens Against Toxic Sprays (CATS)
320 NW 6th St.
Grants Pass, Oregon

Citizens for Progressive Forestry
P.O. Box 353
Neskowin, Oregon 97149

WILPF (Women’s International League for Peace and Freedom)
78700 Bryson Sx Rd.
Cottage Grove, Oregon 97424

Hoedads
P.O. Box 10107
Eugene, Oregon 97440

CATS (Citizens Against Toxic Sprays)
1385 Bailey Ave.
Eugene, Oregon 97402

HEAL (Healthy Environment Action League)
P.O. Box 228
Azalea, Oregon 97410

McKenzie Guardians
C/o Showalter
McKenzie River, Oregon

Olympic Peninsula CATS
P.O. Box 86
Beaver, Washington 98305

New chapters may possibly be forming in the following communities:

Coos Bay, Oregon
Lewiston, Idaho / Clarkston, Washington
Oak Ridge, Oregon
Portland, Oregon
Okanagon County, Washington

Other groups involved in changing U.S. Forest Service policy on herbicides:

Friends of Slab Creek
Box 75B, Star Route
Neskowin, Oregon 97419

Golden Reforestation
Rt. 1, Box 220
Camas Valley, Oregon 97416

Forestry Legal Fund
Rt. 1, Box 163
Otis, Oregon 97368

GOATS
Box 44
Bayside, California 95524

Northern California CATS
Denny, California 95527

Scientific Pollution and Environmental Control Society
Suite 200, 586 Leon Ave.
Kelowna, B.C. V1Y 6J6 CANADA

Sierra Club
Box 252
Fayetteville, Arkansas 72701

Newton County Wildlife Association
Box 189
Jasper, Arkansas 72641

Coalition for Economic Alternatives
Box 232
Ashland, Wisconsin 54806

Minnesota Environmental Control Citizens Association (MECCA)
Chemicals and Pesticide Task Force
110506 Windmill Court
Chaska, MN 55318

SYMPTOMS OF PHENOXY HERBICIDE POISONING

People living or working in a forest environment where there is suspicion of herbicide spraying or drift should look for the following conditions:

Physical dizziness, nausea, headaches, bleeding from the nose and gums.

Symptoms: exceptionally heavy menstrual periods or spotting between periods, blood in feces, spontaneous abortions, miscarriages, respiratory problems or rashes.

Vegetation: curled or twisted plant tops, deformed plants.

Water: thin, oily film at water source.

Wildlife: unexplained fish kills or carcasses, sickly game.

If you suspect that you have been seriously exposed to herbicides, contact NCAP immediately. If you live in Oregon, the Department of Agriculture also has an emergency number for people who have been sprayed, (503) 225-8311 (ask for poison consultation).

Take notes on any such occurrences, detailing unusual symptoms, and send them to your local affiliate group and to NCAP. Contact NCAP for forms to record this information.
SOLAR CANADA: A Technology Summary

In a developing field like renewable energy there is no single technology which is superior to the others; rather there is a spectrum to be considered. Of the 60 or so solar space-heating systems documented in The Sun Builders, no two are alike in their design, materials, operation and integration with the house. It is still too early to assess the relative merits of each system; there are too many variables to consider. In addition, most systems have yet to go through the true test; a Canadian winter. What we can do, however, is identify some of the trends which have evolved.

The following graphs summarize many of the solar houses in Canada. Graph 1 compares the storage volume for air and water systems as a function of collector area. The two bars represent equivalent heat storage capacity. Five gallons of water stores an amount of heat equivalent to 2.0 cu. ft. of rock storage.

Graph 2 compares the ratio of the collector area to the floor area with the percentage of the house heat load carried by the solar system. The accepted rule of thumb is that the collector area should be one-half of the heated floor area. Few houses follow this guideline, most having only 10 to 40 percent of the floor area as collectors.

As would be expected, it generally holds true that the greater the collector area, the greater the percentage of heat the system is able to provide. The houses which deviate from this correlation generally do so for a reason. For example, seven houses appear to be more efficient than would be expected; that is they supply a large percentage of heat for a relatively small area of collector. Two of these houses have long-term storage; two have large reflectors (effectively increasing the insolation on the collectors), two systems incorporate heat pumps and one house is insulated to R-60.

Graph 3 indicates that costs vary tremendously from one system to another. They range from a low of about $1.70 per square foot to a high of $96 per square foot. The do-it-yourself systems, where the cost includes materials and not labor, are generally less expensive than the commercial units. Air systems (denoted by the grey marks) are generally cheaper. The lowest cost do-it-yourself water systems are generally of the trickle-type. Most of the inexpensive commercial systems are air systems that have been integrated with the house during construction. Generally speaking, a cost of $20-$25 a square foot or less can be considered an economically justified investment. This will vary substantially from system to system, house to house and region to region. Over half of the homes listed are economical by that standard.

Editor's Note: The Sun Builders, from which this note was adapted, is available from bookstores or directly from the publishers, Renewable Energy in Canada, 415 Parkside Drive, Toronto, Canada, M6R 2Z7. Price: $8.00 including postage. (Courtesy Solar Energy Society of Canada)
SOFT PATHERS UNITE!

We've nothing to lose but our chainsaws

Soft energy paths are now being studied in more than a dozen countries, a similar number of subnational regions, and several supranational jurisdictions. Such paths combine, without coercion, increased end-use efficiency, rapid introduction of diverse, renewable energy sources matched in scale and quality to end-use needs and, when appropriate, transitional fossil fuel technologies. To make these studies more efficient, accessible and sophisticated, Friends of the Earth Foundation, under a grant from the Max and Anna Levinson Foundation, has established the International Project for Soft Energy Paths (IPSEP). Its headquarters, in the DOE office, are at 124 Spear St., San Francisco, California 94105, phone 415/495-5210.

IPSEP is an ad hoc, non-profit educational project intended initially to run for one year from January 1978. It has a four-person secretariat directed by economist Jim Harding and including physicist Amory Lovins. IPSEP has two functions. It helps technical groups and individuals doing soft path studies by acting as a clearinghouse providing access to technical and economic data, analytic methods and institutional concepts. Second, IPSEP tries to inject the results of others' studies quickly and effectively into the policy process by circulating annotated summaries of key findings to the public, public interest groups, opinion leaders and policy-makers throughout the world. IPSEP emphasizes clarity, speed, relevance, accuracy, high technical quality and objectivity in its publication Soft Energy Notes.

IPSEP materials are mailed sporadically in looseleaf form, free to individuals and non-profit groups engaged in soft path work and at a nominal charge to others. Much distribution is through national or regional networks rather than direct. Recipients are urged to insure that information flows both ways so that other recipients can be informed as widely and quickly as possible.

Among the technical papers useful to soft pathers and other energy networkers in the charter issue of Soft Energy Notes were those headlined as follows:

- Solar Space & Water Heating in Canada: Neighborhood Systems Competitive with Oil Heating in Some Cities
- U.S. Non-Nuclear Aid: ODC Report/Rural Electrification/Tanzanian Cost Comparisons
- Danes Design Efficient Household Appliances: Savings of 23, 53 and 70 percent Are Possible
- Problems and Prospects of Indian Biogas: Village-scale Needed, Cheaper than Kerosene or Electricity
- UK Report Suggests Half the Energy Is Lost in Industrial Motors
- Silicon Photovoltaics Continue to Fall in Price: Less than $5 a Watt in Latest U.S. Purchase
- Lovins Re-examines the Nature of the ECE Energy Problem

See what I mean? ... chockfull of munchies for us soft-headed techno-twits. Okay, Jim, I'm sending you copies of my grooviest wind energy stuff right now. What have you, dear reader, that you'd like to share? Remember, using nuclear fission at millions of degrees F. to generate electricity to heat our homes to 65°F. is the thermodynamic equivalent of cutting butter with a chainsaw.

Who needs it?

—Lee Johnson

Cold butter is tough cutting. Friends of the Earth knows that. That's why they have decided to come out with this attractive “alternative” to conventional plated flat silver. You'll be the envy of all your dinner guests.

from Not Man Apart
EVENTS

The New Age Education Conference sponsored by Cascadian Regional Library will be held May 12-24 at the Evergreen State College in Olympia, Washington. Its purpose is to share information and ideas concerning alternatives in education; addressing the needs of teachers, students, parents and others interested in innovations in education. For more information contact: CAREL, Olympia Office, Olympia, WA 98502 (206/456-6664).

Fuel Alternatives for Kilns, a conference sponsored by the American Crafts Council Southwest Region, will be held at the University of Nevada, Reno, May 18-20. Highlighted will be demonstrations of a kiln fired with solar energy. Contact John Karrasch, A.C.C., P.O. Box 5116, Reno, Nevada 89509, 702/786-4756.

International Symposium on Community Action, sponsored by Community Action of Europe, will be held this year in La Rochelle, France, between the 19th and 28th of May. Previously held in Scandinavia, this year’s activities will welcome grassroots action groups from throughout Europe engaged in alternative lifestyles based on ecological balance, appropriate technology, conviviality and greater individual expression. It will include a preview of the upcoming Festival of Community Action Films. Contact: Community Action in Europe, 6 rue du Puits de l’Hermite, 75005 Paris, France, tel. 1-535-5886.

Northern Thunder is sponsoring an alternative energy fair July 1-3 at the Dunn County Recreation Park in Menomonee, Wisconsin. This Upper Midwestern Energy Fair will include speakers, concessions, stage shows and sporting events, and educational events. For more information contact: Al Jenkins, 22-1/2 South Barstow, Eau Claire, WI 54701 (715/835-2672).

Community Business Training will be held May 17-21 in Helena, Montana, and will cover democratic management, taxes, budgeting, contracts, consulting fundraising and much more. This is co-sponsored by the Northern Rockies Action Group and the New School for Democratic Management, 256 Sutter Street, San Francisco, CA 94108.

Cerro Gordo Center for Creative Community is sponsoring a summer program 1978 covering ecosystemic community design; offering projects and study in energy, photography, food, ceramics, construction, pathways, mapping and community life. Internships are available in transportation engineering, transportation planning, business management, on-site wastewater treatment, architecture, land management planning and economic planning. The fee is $650 for eight weeks tuition plus food and shelter. For more information contact: Cerro Gordo Center for Creative Community, P.O. Box 569, Cerro Gordo Ranch, Dorena Lake, Cottage Grove, OR 97424 (503/942-9986).

The Fourth Alternative State and Local Public Policies National Conference will be held July 13-16 in Minneapolis/St. Paul. The four-day conference will feature nationally known speakers and scores of workshops on the most innovative proposals and legislation being considered by state and local governments. More information is available from the National Conference, 1901 Que St., N.W., Washington, DC 20009 (202/234-9382).

World Game ’78, the ninth annual summer workshop, organized this year in conjunction with the Toward Tomorrow program at the University of Massachusetts at Amherst, will be held June 16-23. This year, the focus is energy and shelter, and activities include an introduction to World Game concepts during the Toward Tomorrow Fair and presentations of alternative energy and shelter strategies at the World Game Symposium. For more information contact: World Game ’78, Hasbrouck Bldg., University of Massachusetts, Amherst, MA 01003.

Country Workshops 1978, organized by Drew Langsner, author of Country Woodcraft will be held July 24-28, July 31-August 4, and August 15-19. These workshops are taught by mastercraftsmen emphasizing natural materials and technical excellence and subject areas covered will be Scandinavian woodcarving and log building. For more information contact: Drew Langsner, Route 3, Box 221, Marshall, NC 28753.

The Fifth Annual Aspen Energy Forum will be held May 26-28 at the Aspen Institute for Humanistic Studies in Aspen, Colorado. The topics will include humanistic choices in energy and resource development, appropriate technology, wholistic architecture, alternative energy sources, energy self-sufficiency and water conservation. Tuition is $50, $30 for students. For more information contact: Roaring Fork Resource Center, P.O. Box 9950, Aspen, CO 81611 (303/925-8885).

Northern Rockies Action Group, a non-profit management consulting organization involved in public interest issues, is seeking a Research Director for their Montana Economic Development Project. The project is intended to define a desirable economic future for the state of Montana, recognizing the importance of such qualities as sustainability, diversity and self-determination. Applicants should have an advanced degree in economics and a desire to participate in an innovative experiment in public interest economics. Proposed starting date is 1 July, pending adequate funding. Send resumes to Adam McLane at NRAG, 9 Placer St., Helena, MT 59601.

The Office of Appropriate Technology in California is looking for someone to help write information sheets, bibliographies and reports in a.t.-related subjects. They prefer someone with at least three years’ experience who has a technical background or who can convey technical information well. Please send resume to Gigi Coe, Office of Appropriate Technology, 1530 10th St., Sacramento, CA 95814, by May 12.

The Farallones Institute Rural Center is looking for a person with a strong background in research, education, and off-site consultation beginning this summer. Contact them at: 15290 Coleman Valley Road, Occidental, CA 95465, (707) 874-3060.
**RAIN PUBLICATIONS**


- **Suburban Ecotopia Poster**, by Diane Schatz, 22"x30", $3. Available for the first time in full size, this finely executed drawing illustrates Small-Is-Beautiful and self-reliance principles applied in a happy suburb of the very near future. Also great for kids’ (and grown-up kids!) coloring. (See cover of April ’76 poster issue)


- **Cosmic Economics**, by Joel Schatz and Tom Bender, revised March 1974, $1.

  Principles to be carefully remembered in wending our way through this transition, and outlines for the simplest and most effective economic mechanism we’ve seen for guiding that transition.


- **Sharing Smaller Pies**, by Tom Bender, January 1975, 38 pp., $2. Discussion of the need for institutional change tied in with energy and economic realities. Begins to lay out new operating principles. Including some criteria for appropriate technology.

- **Environmental Design Primer**, by Tom Bender, 206 pp., 1973, $5.95. Meditations on an ecological consciousness. Essays about moving our heads and spaces into the right places.

- **Living Lightly: Energy Conservation in Housing**, by Tom Bender, 38 pp., 1973, $2. Early ideas on the need for change in building and lifestyle; compost privies; Ouroboros Project (self-sufficient experimental house in Minnesota) and the “problem of bricks in your toilet.”


  A simple, step-by-step way to figure the employment impacts of a new industry and consider the benefits of different options.

**Back Issues Available, $1 each.** List those desired:

Vol. I, Nos. 7, 8, 9; Vol. II, all 9 issues (Vol. II, No. 6 was a poster issue; Vol. II, No. 9 was a special issue on Northwest Habitat.) Vol. III, all 10 issues; Vol. IV, Nos. 1, 2, 3, 4, 5 (Vol. IV, No. 2 was a special issue guest edited by the California Office of Appropriate Technology).

---

**SUBSCRIBE TO RAIN!**

**SUBSCRIPTION RATES:**

- **Regular**: $10/year - 10 issues
- **Living Lightly**: $5/year - 10 issues (income less than $5,000 . . . ?)
- **Add $2.80/year for Canada and Mexico (payable in U.S. Dollars).**
- **Inquire for other foreign rates**

<table>
<thead>
<tr>
<th>Option</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publications (listed above)</td>
<td>$</td>
</tr>
<tr>
<td>Donation</td>
<td>$</td>
</tr>
<tr>
<td>Add $5 billing fee if payment is not enclosed</td>
<td>$</td>
</tr>
</tbody>
</table>

**TOTAL AMOUNT ENCLOSED** $
From our experience, good compost can be made by anybody. Although no one seems to know exactly what goes on in a compost pile yet, you don’t have to know exactly. Susan says that making compost is like making a casserole. You just get a feel for the ingredients. The ground leaves and dried grasses are the filler or the bland part—not too active. The soppy ground-up green matter is the sauce—the protein more active. The manure is the spice—you don’t need as much but it brings everything together, makes it work. —Tyrone Cashman, from Book of the New Alchemists

Book of the New Alchemists, Nancy Jack Todd, editor, 1977, $6.95 from: E.P. Dutton
201 Park Ave. So.
New York, NY 10003

Most people into appropriate technology have by now heard of New Alchemy Institute—a group who have long been doing whole systems experiments in Woods Hole (Mass.), Prince Edward Island (Canada) and Costa Rica. This book gives you a chance to become a little more familiar with their work. It is a collection of pieces from their yearly Journals, including John Todd’s “A Modest Proposal,” Nancy Jack Todd’s “Women in Ecology,” and extensive sections on aquaculture and bioshelters. Lots of pictures too. Here’s a lovely quote from New Alchemist Bill McFarney which sums up what many of the people doing this kind of work are all about:

“Well, I don’t suppose any of us is fool enough to think we can save the world. But if each of us were to look at some of the directions we’d like to see the world go in—and then to put our own little bit of force behind one of them—and to have a hell of a good time while we’re doing it, well then, that’s what we should do.”

If you haven’t already seen it, the film on the New Alchemists by the Canadian National Film Board is also excellent. Write to: Challenge for Change, National Film Board of Canada, Box 6100, Montreal, Quebec, Canada. —LdM