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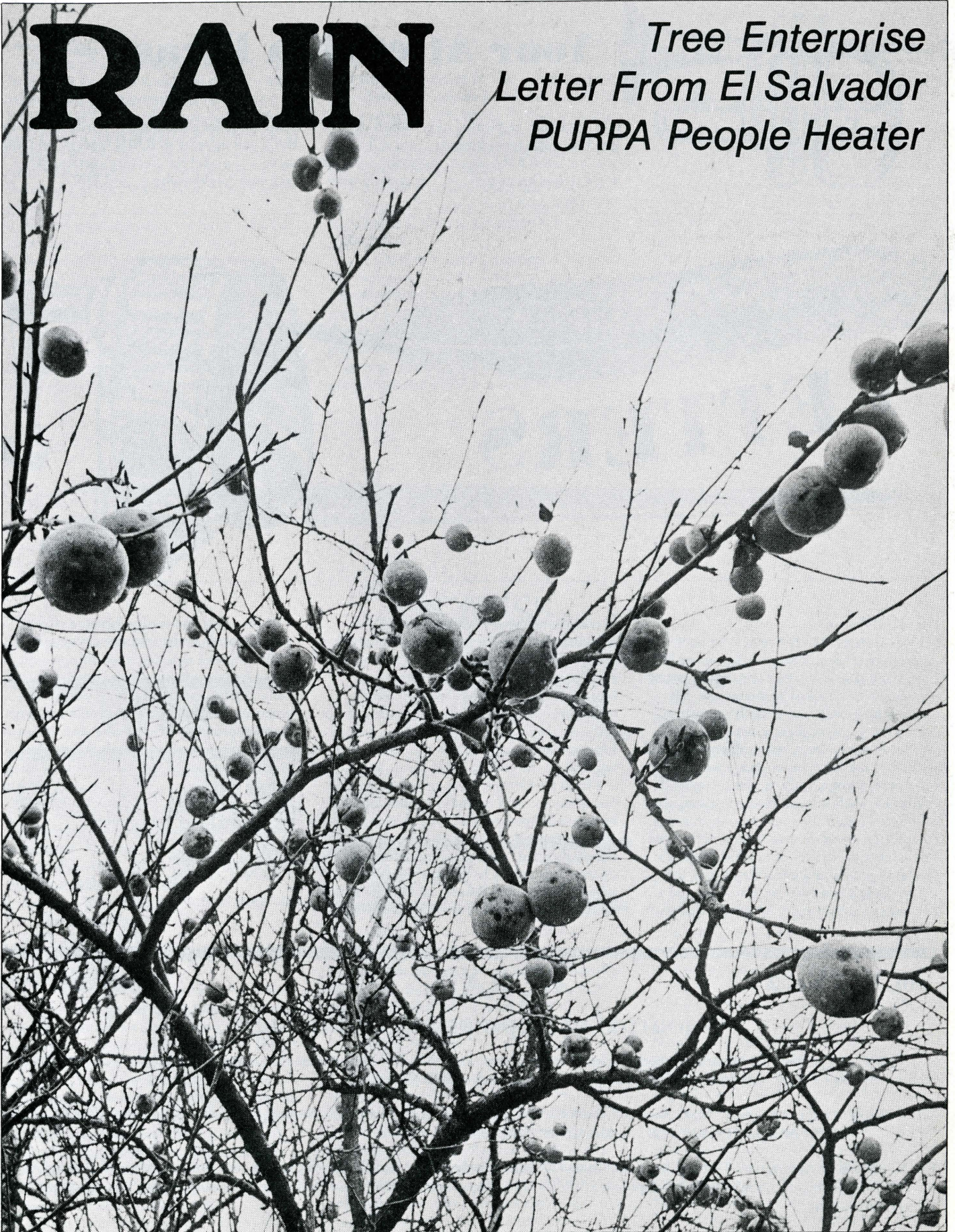
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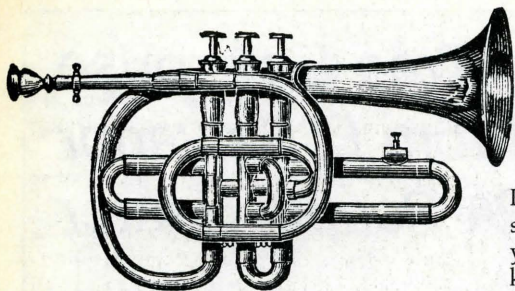
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RAIN

*Tree Enterprise
Letter From El Salvador
PURPA People Heater*

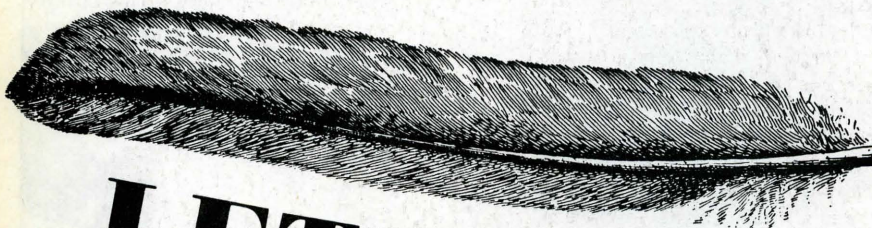




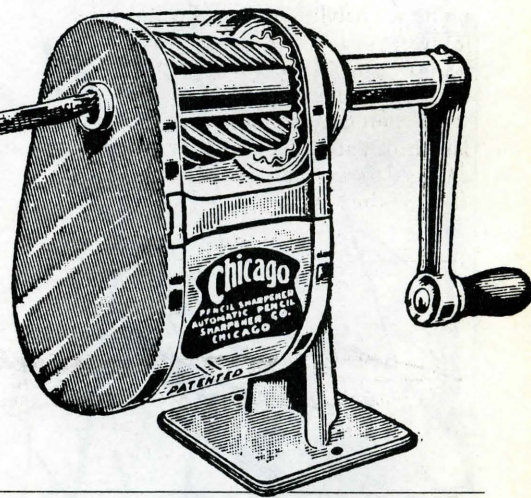
Your Attention Please -

RAIN will not be printed next month. Instead, as a special holiday gift, we will send you our latest publication. Applying what we know to our home turf, we've come up with

some ideas for a sustainable Portland that we think will interest all RAIN readers, and may serve as a model for creating sustainable communities elsewhere. —RAIN



LETTERS



Dear RAINbeaus:

I was interested in the review by Scott Androes of *Understanding Inflation* by John Case. I felt that important and deeper issues were being overlooked in the review. My comments, as well, relate to the spectrum covered in your excellent journal.

The tendency, in all the problems we work with, is to define them in such a way that we can use traditional tools on them—even if traditional tools are valueless in solving the problem—because we fear new approaches (they often mean that we must redefine ourselves), and we are more comfortable with the familiar, if impotent, thoughts of today.

Mr. Case's book defines inflation, and proposes solutions for it which are well with-

in traditional views. Inflation indeed has something to do with trying to get a larger share of a smaller pie, but legal—economic solutions for inflation tend to ignore its roots: greed and apathy. In other words, inflation—like environmental destruction or war—is primarily a moral problem, and solutions that ignore this pre-eminent aspect will fail, in the end, to solve the problem.

Moral problems are not solved by non-moral forces. And morality cannot morally be imposed upon people. Indeed, it cannot even realistically be imposed, for no humanly directed, exterior force can remold the heart. Thus we are left with a situation where change is necessary, and yet it cannot be imposed.

Only a new and comprehensive vision, only a rebirth of the traditional virtues, in clothing suited to today's conditions, will serve. For me, that vision is contained in the Baha'i Faith, and the startling solutions it proposes. Perhaps you would do a series on moral approaches to problems, and dedicated to exploring some visions which have had practical consequences, such as that of King Ashoka of India (ca. 300 B.C.), or the Imam Ali (ca. A.D. 1650), and those visions that are moving today's mountains.

David W. House
Aurora, Oregon

Vol. VIII No. 2

RAIN

November 1981

Journal of Appropriate Technology

RAIN Magazine publishes information which can lead people to more simple and satisfying lifestyles, help communities and regions become economically self-reliant, and build a society that is durable, just, and ecologically sound.

RAIN STAFF: Laura Stuchinsky, Mark Roseland, Carlotta Collette, John Ferrell, Kevin Bell, Steve Johnson, Steve Rudman, Nancy Cospers, Scott Androes, Tanya Kucak. Linnea Gilson, Graphics and Layout

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Dear RAIN:

Unfortunately, Reaganites might escape from your excellent article on slippery-slide economics ("Involuntary Self-Reliance, RAIN VII:9). Given the supposition that the government must protect free enterprise, as Reagan asserts, then it is the job of government to protect the free competition which is the basis and very meaning of "Free Enterprise."

Yet the government gives huge subsidies to certain enterprises and not others, like unlimited liability to Nuke Plants, money for water projects, oil wells, NASA, and a host of monopolies. There is no "free" enterprise here, only "monopoly" enterprise.

The only possible logical route is to stimulate those enterprises which are being short-changed on the capital pyramid. Because those at the top have more money, they can

invest and stay ahead in the race against inflation.

It would be absurd for the government to subsidize all business equally, although this is the practical outcome of Reagan's simple-minded view. Hence, we must ask, which are the most profitable businesses being hurt by the private value of capital?

We arrive now for logical justification, according to Reagan's view, Neighborhood Renewable Resource Community Development Loans.

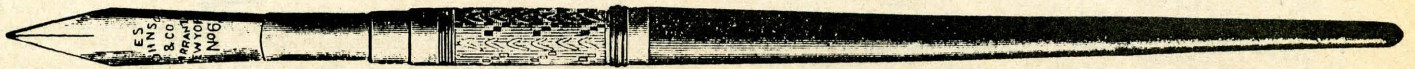
The Quantum Leap explained: It is only the exclusive capital value which inhibits Neighborhood Renewable Resource Community Development. With a loan structure that is free, renewables are always the most competitive.

Indeed, the most profitable and the most environmental *always* meet at some exact

point in the future, e.g., for solar it's 15 years, for water, it can be five, for wind, it's a little higher. Intensive, organic gardening is actually priceless. Non-renewables will meet in the cold, dark deathly eternity of an infinite price.

As non-renewables reach an infinite price, there will be a time that alternative technologies can charge a near infinite price, thus the cost of property can be paid inversely to the price rise of non-renewables. Property then is free when non-renewables reach infinity, and so, things being what they are, will everything else be free. (Free to those who have renewable technologies.)

David Wright
Boulder Creek, CA



ACCESS

WORK

Our Jobs, Our Health, Our Lives, Our Fight: Report of the First National Labor Conference for Safe Energy and Full Employment, October 10-12, 1980, Pittsburgh, PA, 1981, 35pp., \$1.00 (bulk discounts available), from:

**Labor Committee for Safe Energy and Full Employment
1536 16th St. NW
Washington, DC 20036
202/265-7190**

"Let the word go out today to the nuclear industry and to the Government that representatives of powerful unions met in conference this weekend and that we are determined to create a new social force that will throw its weight into the fight for a safe energy and full employment future. When we mobilize our ranks in a spirit of militancy and solidarity, there is no force on earth that can stop us."

—Jerry Gordon, Conference Chair

Who says labor is pro-nuke?

Coal miners, auto workers, steel workers, railroad and garment workers, machinists, teachers, government employees and electrical workers came together last fall to demand

an end to further dependence on nuclear power, guaranteed jobs for those now employed in the nuclear industry, and a rapid switchover to a safe energy, full employment future. All told, 55 unions from 33 states were represented. Watch out, Con Ed, we shall not be nuked! —MR

RESOURCES

Research for Action: A Guidebook to Public Records Investigation for Community Activists, by Don Vilarejo, 1980, 112 pp., \$7.50 plus \$1.25 p&h from:

**California Institute for Rural Studies
P.O. Box 530
Davis, CA 95616**

Research for Action shows citizen activists how to build a case against vested interests by documenting exactly how the interests are vested. Who's on what board of directors? Who owns what real estate? Who contributed large sums to whose campaign? In a clearly-presented, step-by-step manner, the book shows how to locate needed information in county courthouses, state agencies, and local libraries—and how to interpret

official documents which may initially seem to be written in some extra-terrestrial dialect. *Research for Action* demystifies the process of digging out public information and makes the point that public records are exactly what the words imply: resources available to all of us to protect our rights and further our efforts to build a just society. —JF

1980 Index to Alternative Magazines, by Applegate Computer Enterprises, 1981, 110 pp., \$5.95 plus \$.75 p&h from:
**Applegate Computer Enterprises
P.O. Box 288
Applegate, OR 97530**

Here it is: ready access to articles and reviews in your 1980 back issues of *RAIN*, *Small Farm Journal*, *Co-Evolution Quarterly*, *Mother Earth News*, *Home Energy Digest*, *Countryside*, and *Organic Gardening*. The *Index to Alternative Magazines* is arranged by subject and its clear format and extensive cross-referencing make it possible to quickly locate the article you need, even when you don't have an exact recollection of a title or contents. The *Index* will certainly be in regular use at the Rainhouse—and lots of other places around the country. Thanks to the Applegate Computer folks for a valuable reference tool. We'll look forward to future editions. —JF

by Ricardo Navarro

One problem with the A.T. (appropriate technology) movement is that appropriate technology is usually not clearly defined, sometimes meaning different things for different people. Frequently it is thought of as technology which is small scale or of an intermediate size, labor intensive, light capital, and uses renewable resources. Such technology is considered "appropriate" and its use is promoted without questioning its direct effectiveness or indirect consequences for development of a country or region. While it is true that several of these new technologies carry a human dimension greater than conventional technologies, it is also true that their use involves considerable danger, since they may represent a subtle new form of economic exploitation. Furthermore, the A.T. movement contributes to creating the impression that appropriate technology is a necessary and sufficient condition to get the poor countries out of the underdeveloped state.

Does this mean that what people call "appropriate technology" is necessarily a bad movement? The answer is no. But in order to be a good movement it has to meet some requirements. Any technology is appropriate for something, and we must discuss what it is that we want the technology to be appropriate for. Do we want a technology appropriate for exploiting a particular natural resource, or appropriate for concentrating the power and well being of a few, or appropriate for strengthening the ties of economic dependence of one country on another country, or appropriate for maximizing the profits of a multinational corporation? There are a lot of technologies appropriate for achieving those goals and some people would argue that they are also "appropriate technologies."

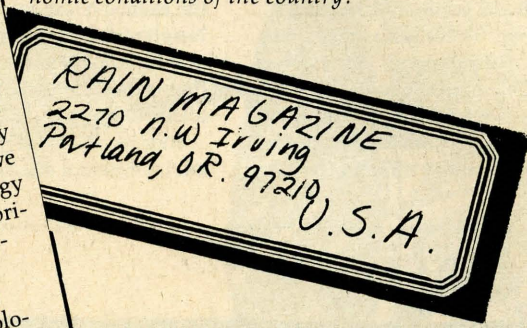
How do we limit our definition of A.T. so that it is "appropriate" for people, and its conception does not become corrupted and misused by the international capitalist system to exploit the poor people of the world? It seems to me that a straightforward definition is a technology is appropriate if and only if IT CONTRIBUTES TO THE LIBERATION OF THE OPPRESSED PEOPLE IN THE WORLD. With this definition, appropriate technology is the technology which is oriented towards placing a country in a position of being capable of satisfying the needs of the people (physical, spiritual and social needs). But that satisfaction is not only a technological problem; it is also, and more importantly, an economic problem. It is the structure of an economic system that allows large sectors of the population to accumulate huge profits, leaving large groups of people without the resources to satisfy their basic human needs. Therefore, to talk about appropriate technology, we must concomitantly talk about an "appropriate economic system," that is, a system in which the economic forces are efficiently oriented towards satisfying human needs.

The fact that an "appropriate economic system" is a requirement for "appropriate technology" to exist, by no means implies that nothing can be done on technological grounds until a given country has a desirable economic system. A lot of experience can be gained by developing pilot projects to see the performance of a new idea or the cultural problems of the adoption of a given technology—but always bearing in mind their limitations. Furthermore, if my definition is taken seriously, there is always the possibility of developing a technology that in and of itself helps create the conditions for the installation of an "appropriate economic system." But it is crucial that no false expectations be created by letting people believe that technology has the answers to their social problems. Technology certainly will help, but a social change might be an indispensable requirement for development.

In summary, no technology is appropriate for a country, when there is an "inappropriate economic system"; on the other hand, an appropriate economic system will not grow and develop if it is not sustained by appropriate technology, that is, technology that makes efficient use of resources, and contributes to accelerating the process of national and human liberation. □□

Letter From El Salvador

Ricardo Navarro is President of the Centro Salvadoreño de Tecnología Apropriadada (CESTA) in San Salvador, El Salvador. CESTA is a non-profit independent organization, in charge of promoting the implementation of technologies appropriate to the social and economic conditions of the country.



A technology is appropriate if and only if it contributes to the liberation of the oppressed people in the world.

NO NO NAIROBI: Renewables For The Third World?

The UN Conference on New and Renewable Sources of Energy, held in Kenya in August, was virtually ignored by the U.S. press—while the European and world press covered it extensively. This article comes from a participant who thinks we ought to know what our U.S. delegation said for us. —MR

by Gary Gallon
Environment Liaison Centre

Any chance of success for the Nairobi Plan of Action at the UN Conference on New and Renewable Sources of Energy held in Nairobi in August was scuttled by the hardline stand of the Reagan U.S. delegation. The delegation would agree neither to a new institution, nor to a new funding mechanism to support a United Nations follow-up program.

Other donor nations were interested in supporting both, if an agreement could be reached. The major stumbling block was the institutional arrangement. The best compromise would have been to give the responsibility for the Plan of Action to the UN Committee of Natural Resources which reports to the Economic and Social Council, and to expand the membership of the Committee to include all nations which sit in the UN General Assembly. Currently, the Committee has a limited membership which favors the industrialized countries. The compromise was opposed.

There were two key reasons for the U.S. stone-wall position. First, it reflects the Reagan administration's new financial posture of cutting back funds on all social and aid assistance programs while increasing its military expenditures. Secondly, it reflects the Reagan administration's decision to depend upon military might to solve world problems rather than on the United Nations system. The U.S. Government's interest in the U.N. has shifted to neutral.

The U.S. made a feeble attempt to show some cooperation with developing countries when it unilaterally announced it was doubling its U.S. AID (Agency for International Development) contributions to renewable energy programs from U.S. \$35 million to \$70 million. It was a small amount and only a reshuffling of old cash.

The U.S. NGOs (non-governmental organizations) representatives did not waste any time in condemning the U.S. stance at the Conference. Outraged by the avoidance and stalling tactics of the delegation, the U.S. NGOs called a press conference and issued a statement detailing the Reagan administration actions which have scuttled U.S. renewable energy programs at home and overseas. Several U.S. Congressmen visiting Nairobi at the time joined in the criticism, revealing the depth of division among the U.S. people over the anti-development, anti-renewable energy stand of the new President.

In the meanwhile, the International NGO Forum on New and Renewable Sources of Energy, also held August in Nairobi, brought together 650 Non-governmental organization representatives from 63 countries to discuss ways NGOs could improve their energy programs. Eleven panels and 75 workshops were held to discuss activities ranging from the technologies of bio-gas to methods for lobbying governments.

NGOs were responsible for strengthening the Nairobi Plan of Action statements on women, the environment and NGOs. The NGO newspaper, RENEWS, became the eyes and ears of the Conference, reaching through the bureaucratic smoke and exposing key issues. Ten editions were printed. Sets are available for U.S. \$15 from the E.L.C., P.O. Box 72461, Nairobi, Kenya.

The Forum, in conjunction with the Kenya NGOs Working in the Field of Renewable Energy (KENGO), held a "Fuelwood March" August 11. One thousand people paraded through the streets of Nairobi, arriving at the steps of the Conference Center where they were met by Kurt Waldheim, the UN Secretary-General, and Prime Minister Trudeau of Canada, Prime Minister Falldin of Sweden, and Prime Minister Seaga of Jamaica. The march impressed upon the Conference delegates the importance of the world's second energy crisis, depletion of firewood and charcoal.

Nuclear power was not supposed to be a part of the Conference deliberations. It had been kept out of the agenda on purpose, apparently because governments were afraid of the political uproar and public opposition. The NGO Forum agreed not to focus on the nuclear issue.

However, it turned out that the atomic interests were at work. The International Atomic Energy Agency (IAEA) had convinced the Prime Minister of Jamaica, Seaga, to propose that the U.N. responsibility for renewable energy be given to IAEA. He proposed this in his speech to the Conference. In the meanwhile, other government representatives promoted nuclear power as the most viable source of energy to replace oil, and played down the prospects of renewable energy being a major replacement source in the near future.

The NGO Forum responded by holding a workshop on "Nuclear Power and Renewable Energy." It condemned the promotion of nuclear power, listed the numerous problems associated with its use, and noted that even after 30 years of generous R&D funds, nuclear was still not a viable source of energy. The workshop also outlined the accumulation of research and development funds in nuclear, leaving little for renewable energy. □□

Gary Gallon was the Coordinator of the International NGO Forum on New and Renewable Sources of Energy. He spent four years in Nairobi as the Executive Director of the Environment Liaison Centre.

The U.S. Government's interest in the UN has shifted to neutral.

There is an area of conservation that many governments are reluctant to talk about. It is in the field of military activities. Few of us realize how much energy is used to build, arm and fuel national armies. The most conspicuous consumers are, of course, the United States and the USSR. But others are laying out more and more for military purposes. These include France and South Africa, and Third World nations such as Brazil and Pakistan. OPEC nations have been especially busy converting the money transferred from oil sales into non-productive military purposes.

It takes almost a year's supply of petrol used by a tank to build a tank. Large amounts of energy are used from extraction and processing of the steel all the way to fabricating and assembling the body. The same goes for navy battleships and fighter planes. The production of nuclear warheads consumes more energy by weight than any other weapon. Military exercise and naval ship movements from ocean to ocean wastes even more precious energy resources. Governments will show that they are serious about solving the energy crisis when they begin to plug the energy drain created by unnecessary military activities.

ACCESS

ECONOMICS

The Politics of the Solar Age: Alternatives to Economics, by Hazel Henderson, 1981, \$5.95 from:

Anchor Doubleday
501 Franklin Avenue
Garden City, NY 11530

This is an exciting book. At last someone has articulated so many of the concerns I've been trying to grapple with and done so in a holistic, encompassing way. In fact, I passed up my first opportunity for a high peak climb in the Cascades to write this review. . . .

Henderson examines such phenomena in our society as increasing rates of inflation, structural unemployment, the failure of macroeconomic management, growing tax revolts, unsustainable resource-intensive pathologies of material abundance and waste, and the forces pushing toward greater energy and capital intensity, yet still concludes that "we do not know enough to be pessimistic." Indeed, in this social, ecological, and spiritual critique of industrialism she convinces us that those who have the greatest interest in maintaining the status quo are the ones who have most cause to cry that the sky is falling. The rest of us need to get on with the job of reconceptualizing our situation and redefining our problems. She reminds us that value systems and ethics, far from being peripheral, are the motivating forces in all economic and technological systems. Industrial societies must face up to the unsustainability of their value systems rather than view their "problems" as deficiencies of nature.

Industrial cultures need now to restructure their knowledge by turning to the repressed, alternative ways of viewing and thinking of their subordinated groups because it will be almost impossible to find innovative ways of handling today's crises (economic, social or ecological) from within the dominant culture. They must shift from an excessive yang-oriented value system emphasizing instrumental rationality, empirical knowledge, competition, expansion and aggression to reviving the yin qualities and the nurturing, cooperative, cohesive patterns.

Henderson sees this shift already happening at the grassroots level in the growing counter-economy, where ingenuity, improvisation, and entrepreneurial spirit flourish. Here people are bartering and cooperating with their neighbors rather than competing for dollars.

One of the beauties of this monumental work is that Henderson makes no pretense that the task before us will be easy. Indeed she maintains:

The deeper dilemma in shifting out unsustainably imbalanced patriarchal societies lies in their very long traditions. . . . This whole set of "masculinized" values is now deeply associated with male identity, and thus any attempt to dig deeper, to this more fundamental level of social analysis, is extremely threatening personally and is usually energetically resisted, denied, reversed, or repressed, with all the classic defense mechanisms described by psychologists.

The question is, says Henderson, "How are we going to get through the '80s?" Part of the answer for me is "With this book always close at hand." —Mary Vogel

Mary Vogel works with Oregon Appropriate Technology in Eugene, OR.

The Zero-Sum Society, by Lester C. Thurow, 1980, 230 pp., \$4.95 from:
Penguin Books
625 Madison Ave.
New York, NY 10022

A zero-sum game is any game where the losses exactly equal the winnings. . . . The problem with zero-sum games is that the essence of problem solving is loss allocation. But this is precisely what our political process is least capable of doing.

Thurow is a professor of economics and management at Massachusetts Institute of Technology, an economic columnist for the *Los Angeles Times*, and served for a short while on the editorial board of *The New York Times*. In other words, he's very credible, and his book has been well received by the likes of *Time* and *Business Week*. It's this background that makes the book so interesting.

Tackling a lineup of hairy subjects (energy shortages, environmental pollution, lagging production, rampant inflation, growing unemployment, and government regulation) Thurow claims that, in every case, we run up against the same issues of direct redistribution. "Every increase in the relative income of one group is a decrease in the relative income of another group. The gains are exactly counterbalanced by an equal set of losses." People are not demanding more, says Thurow. They're demanding parity. Unless we can figure out some way to face this problem head on, "our society is going to both stagnate and be split along group lines."

The goal, says Thurow, "is to change the structure of the economy so that the entire economy generates the kinds of jobs that are now open to white males and ensures that there are enough of these job opportunities to go around." This is quite a challenge from someone who is a firm believer in the market mechanism. "The market efficiently adjusts, but to an inequitable set of demands. It is as

if we had an efficient street sweeper who was sweeping the wrong street."

Be that as it may, Thurow acknowledges that the rate of unemployment for blacks simply cannot continue to be twice that of whites, nor can the fact that women still earn only 60 percent of what men earn be tolerated for the next forty years as it has been for the last forty. What's the next move?

The time has come . . . to admit that the pursuit of equity and equal economic opportunity demands a fundamental restructuring of the economy. . . . The only solution is to create a socialized sector of the economy designed to give work opportunities to everyone who wants them but cannot find them elsewhere.

Once again touting his belief in the economic system (if only it would work!), Thurow concludes with a plea for political accountability and blames the two-party system. "Our problems arise because, in a very real sense, we do not have political parties . . . somehow we have to establish a political system where someone can be held accountable for failure. . . . Every politician with his or her own platform is the American way, but it is not a way that is going to be able to solve America's economic problems."

It's late in the game, don't you think? Time to change the score. —MR

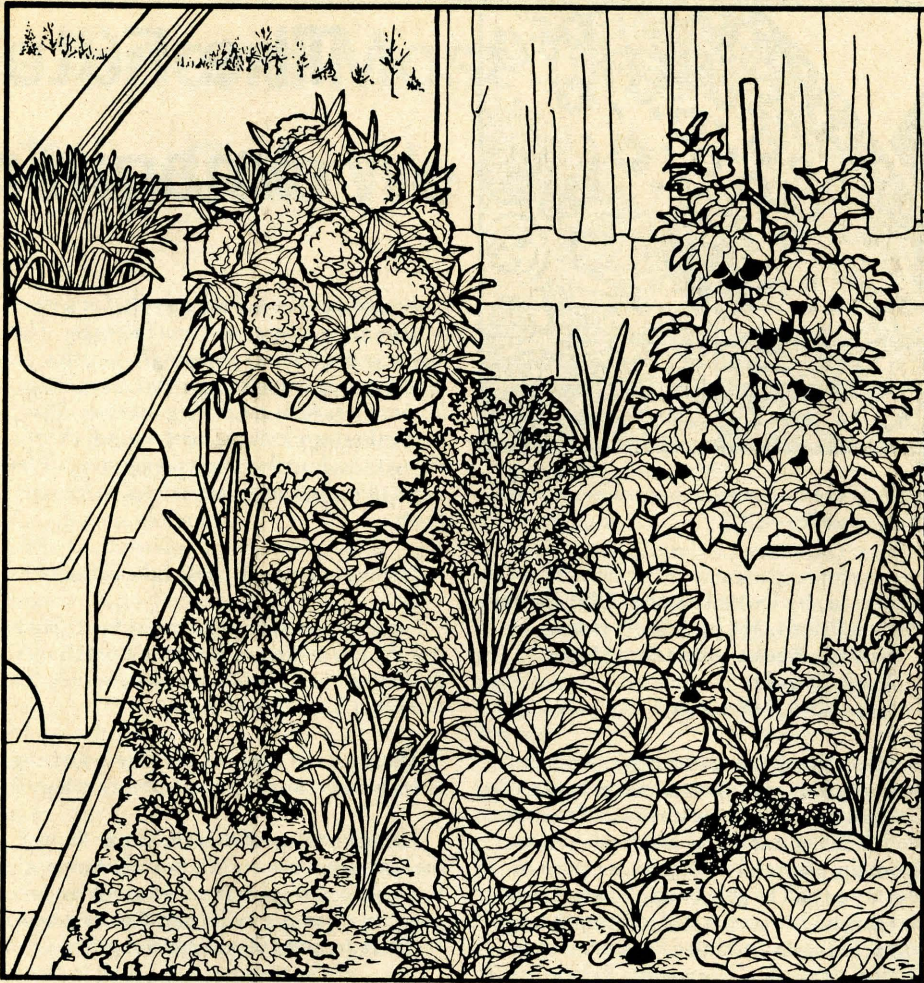
GARDENING

Growing Food in Solar Greenhouses, by Delores Wolfe, 1981, 192 pp., \$10.95 from:

Doubleday & Company Inc.
245 Park Ave.
New York, NY 10067

Before you design and construct your vision of a solar greenhouse "for year round food production" read this book. It will be painless, quick, even pretty, and the grounding (so to speak) it will give you will either discourage you outright or provide just the balance of information you'll need. This will be just as true whether you've never gardened at all (but think it would be "fun" to raise some tomatoes in January) or if you garden extensively and think the greenhouse will be a simple addition to your spread. The thing is, greenhouse gardening is a pretty complicated, time consuming, and occasionally frustrating endeavor that is all too often viewed unrealistically.

Wolfe's book takes you month by month through the annual cycles in greenhouse growing. The contrasts and comparisons with outdoor gardening are especially useful



From: *Solar Greenhouses*

to the experienced gardener who will probably worry (and justly so) over light intensity and duration, carbon dioxide depletion in these well sealed structures, and disease and pest control in this "best of all possible worlds" for slugs, white flies and mites. Novices will value the sections on soil, nutrients, propagation and the growing seasons under glass. I was pleased to see the solid section on growing fruit in the greenhouse. Fruit growing "out of season" was one of the major goals of eighteenth century innovators who dreamed up greenhouses—then called "Orangeries" or "Limehouses" or "Pineries" (for pineapples). Few contemporary greenhouse books even mention fruit production, so Wolfe fills a need there.

I was also pleased to see her stress record-keeping. If you think of solar greenhouses as systems that need tuning, adjustments and general maintenance, you'll find monitoring your experiences a definite advantage. You'll be less likely to repeat errors if you've kept track.

I've seen several introductions to solar greenhouse gardening but few as comprehensive as this one. Between January and November are covered most everything you'll need to know to get producing, and December offers a practical bibliography to guide you further. —CC

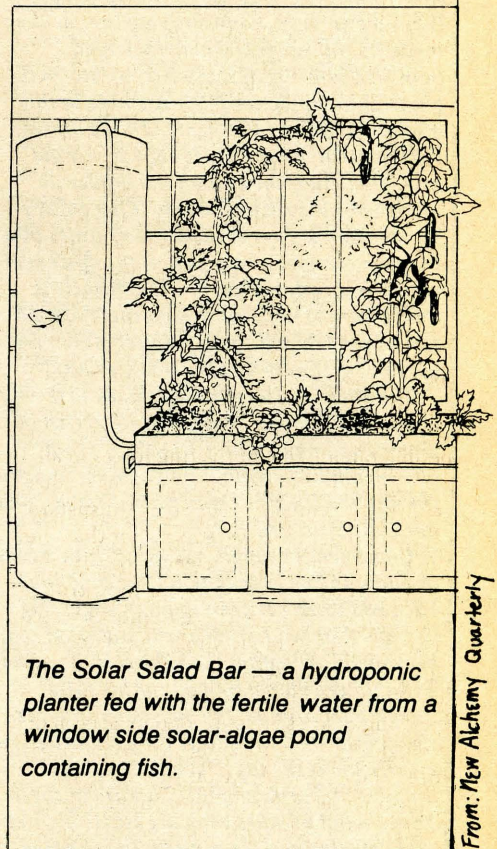
"Gardening in Fertile Waters, by Carl M. Baum, *New Alchemy Quarterly*, No. 5 (Summer 1981), \$2.00 from: New Alchemy Quarterly 237 Hatchville Road East Falmouth, MA 02536

I had pretty much dismissed hydroponics several years ago; the heavy energy subsidies required to maintain ideal growing conditions plus the predominant use of inorganic, chemical fertilizers didn't seem to make for an "appropriate" technology. Furthermore, given how little is known about the makeup of soil, the very idea of trying to chemically imitate it appeared somewhat preposterous. According to the New Alchemists, however, there's another side to the story. By combining hydroponic plant culture with fish culture, not only can hydroponics be practiced organically and efficiently, but "fertile waters deserve perhaps as much attention as the compost bucket when it comes to reusing waste nutrients."

Hydroponic gardening has some distinct advantages over conventional, soil-based agriculture. Hydroponics conserve water and fertilizer nutrients; circumvent the problems of nutrient fixation, leaching and runoff in soils; are less prone to soil-related diseases

and weeds (reducing the need for pest control measures); can be considerably cheaper and less labor-intensive than soil culture; and (the greatest advantage), can produce superior crop yields.

Hydroponics is an attractive option where space, water, nutrients and capital are limited, such as in arid regions or urban areas. "The basic technology is relatively simple and highly amendable to small-scale, amateur use, whether in a window garden or a bioshelter. It appears particularly attractive from an ecological point of view if significant quantities of food crops can be grown with the nutrients contained in domestic garbage (composed and worked by earthworms) and waste waters or, in the case of a bioshelter, fertile fish pond water that might otherwise be discarded to the environment. Hydroponics is also quite compatible with passive solar heating strategies in its use of water, an excellent thermal storage medium. A sun-warmed nutrient solution gives a definite growth advantage to hydroponic plants over those in cooler soil beds."



The Solar Salad Bar — a hydroponic planter fed with the fertile water from a window side solar-algae pond containing fish.

From: *New Alchemy Quarterly*

In tests at the New Alchemy farm, celery, tomatoes, lettuce and basil all produced yields that compared favorably to soil-based yields. While the taste of one winter celery crop was thought to be "strong," it did not, fortunately, taste fishy.

Included in the paper is a bibliography for further reading. The article leads off the first issue of the former *New Alchemy Newsletter*, now the expanded *New Alchemy Quarterly*. The new publication promises to be wonderful! —MR

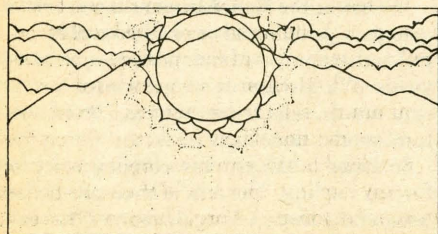


The Future Imagining

One night this summer a friend and I were camped out in an alpine meadow on Mount Jefferson. We were beginning to drift to sleep, watching the stars, more numerous than I'd ever seen, counting satellites as they made their passages, when my friend launched into one of those irresistible metaphysical monologues. "We are here in this mountain valley in Oregon, United States, Planet Earth, on the outer edge of our galaxy. That enormous moon is a minuscule member of the cosmic society. Our galaxy—all the stars we can see and many times that number—is just a tiny part of the system of many, many galaxies. . . . The miracle is that we are at once more a marvel than we can let ourselves fathom and yet more minute than is comfortable to think about."

The question I keep coming back to is why it is so brain-wrenching for us to stretch our understanding in either direction. From where comes the prohibition against imagining and realizing our way into harmony and out of destruction?

Coincidence brought me these three books at once, and as I read them I began to move back and forth between them, recognizing threads that laced from one to the other and back again. Whether the subject is the mind/body, or the planet/person, or the fully imaginable cosmos, the questions and often the answers are the same. If I were to design a curriculum in, say, "Whole Systems Visualizing," I'd probably include each of these books—not because they are especially new and singular in their content, but because



each of them synthesizes so much information so well. —CC

Shikasta, by Doris Lessing, 1981 (paperback edition), 365 pp., \$4.95 from: Vintage Books—Random House 201 E. 50th St. New York, NY 10022

If you can make the psychic leap from our pinhead status in the astral plane to our systems management role on spaceship earth, and then can move back and forth in time from the planet's birthing to its return to dust, you will be able to accompany Doris Lessing on her accelerated journey through time. *Shikasta*, subtitled *Personal, Psychological, Historical Documents Relating to Visit by Johor (George Sherban) Emissary (Grade 9) 87th of the Period of the Last Days*, is, as you can imagine from that "Last Days," not an optimistic book.

It's about the fall from order and reason, the direction of the descent into mental confinement and planetary dissolution. It is almost too close to the bone to be fiction, only true science fiction in its supra-historical sprawl.

It's the story of a planet, *Shikasta*, which en route to harmony and some perfection, is disturbed, turned back from its goal. It's the tale from an early forgetting;

I had to tell these unfortunates that due to circumstances entirely beyond their control and for which they bore no responsibility at all, they would become less than shadows of their former selves. . . . It was as if I had been given the task of telling someone in perfect health that he would shortly become a moron, but that he must do his best to remember some useful facts, which were a . . . b . . . c . . .

Through deliberate deceit;

The qualities prized in "public servants" on Shikasta were, almost invariably, the most superficial and irrelevant imaginable,

and could only have been accepted in a time of near total debasement and falseness. This was true of all sects, groupings, "parties": for what was remarkable about this particular time was how much they all resembled each other, while they spent most of their energies in describing and denigrating differences that they imagined existed between them.

To the planet-wide trial of the white races;

I open this trial with an indictment. That it is the white races of this world that have destroyed it, corrupted it, made possible the wars that have ruined it. . . .

There is even the hint of a new beginning (a lead into volumes 2 and 3 of this trilogy?);

I have understood that the vague blank look is from the past. It is not what we are now. Do you think it is not so much we forget things that are awful but that we never really believed in them happening?

This book is so wide in its understanding of space and time, so ecological in its description of interdependencies, and so consistent in its pursuit of political histories that construct (or destruct) political futures that you will want to read it more than once. Lessing's artful elegance with words makes the reading a joy.

Your Body Works, edited by Gerald Kogan, Ph.D., 1981, 180pp., \$9.95 from: And/Or Press, Inc. P.O. Box 2246 Berkeley, CA 94710

Margaret Mead listed, among the best things you can do for yourself, having yourself analyzed. I tend to agree, finding the journey across the continents of our personal pasts at least as exciting and educational as global or cosmic searches. But the trick to that journey (as in any travel) is finding a good guide (therapy, after all, comes from the word nurse, as in nurture). Given the amazing growth of therapy as an industry with all the brand-name competition of the marketplace, it is often difficult enough just to choose a "school," let alone a single practitioner. *Your Body Works* offers brief descriptions by

We Spend Most Time Is The One We Get

—Joel Schatz

leaders in each "school" of their approach to inner space exploration. In reading them I found less contrast than similarity and welcomed a sense of camaraderie over competition. It seems to me (and this is why I grouped this with these other books) that this body/mind separation is a critical factor in our more total separation: human beings from the rest of nature.

The Western way of operating in the world has always been forward—moving forward, going toward a distant goal, never looking back—especially in American society. People in Western societies in general are especially unaware of the back half of the body. . . . While forward energy has led to high achievement, it actually is a very weak stance. It's off balance. The forward-leaning individual or culture can easily fall on its face."

I think that the certainly noble and often self-righteous struggle to keep us from destroying virtually everything we're conscious of must begin, like charity, at home—in the body. It is at once an intimate and universal task. Learning from within and building a society that "could tolerate gentleness and pleasure in life, that would shun violence and to whom war would be anachronistic . . . has never been fully tried yet. Only by allowing human character structure to become healthy will we at last actualize healthy human and political institutions."

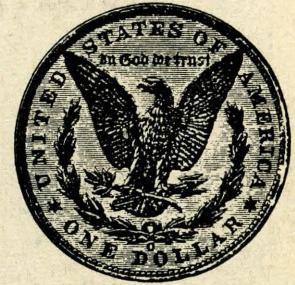
Green Paradise Lost, (formerly Why the Green Nigger) by Elizabeth Dodson Gray, 1981 (1979), 166 pp., \$7.95 from: Roundtable Press Four Linden Square Wellesley, MA 02181

In *Green Paradise Lost*, Elizabeth Dodson Gray takes on cultural and scientific rhetoric that puts "man" (not women or children) at the top of a hierarchy which is seen as structured to serve man. She suggests, "It is difficult for us, trained as we have been in the male culture, to understand the order there is in a diversified system which is non-hierarchical."

In a fascinating survey of religion, philosophy, physics, biology, and psychology, she outlines new theories to refute this anthropocentric perspective. From Lewis Thomas' *The Lives of a Cell* (New York: Viking Press; 1974) through Fritjof Capra's *The Tao of Physics* (Berkeley: Shambhala Publications; 1975), from poetry and her own journal-like narrative of a summer at the ocean, she outlines a world view that is part quantum physics, part transcendentalism, and part something several steps beyond christian stewardship. "'Why,' some will ask, 'is responsible stewardship over nature not an adequate safeguard?' Because so long as stewardship carries with it the illusion of superiority or *noblesse oblige* (as it does now), it is simply benign paternalism."

The book is a montage of diverse perspectives made all the more interesting by their coming into contact with each other.

FUNDRAISING



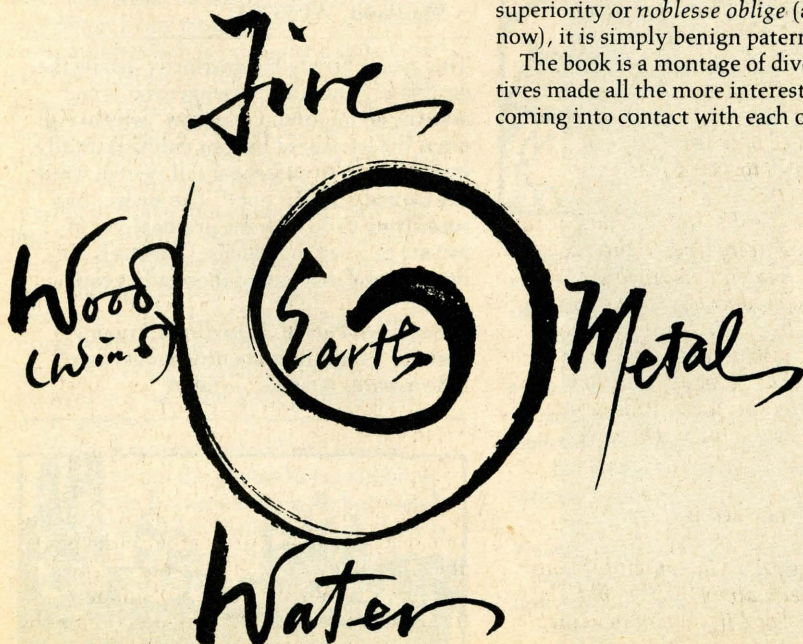
The Grantseekers Guide: A Directory of Social and Economic Justice Projects, by Jill R. Shellow, 1981, 313 pp., \$5.00 from:

**National Network of Grantmakers
919 N. Michigan Ave., 5th Floor
Chicago, IL 60611**

Community-based organizations have always had a difficult time finding funding sources for their projects. But the funding picture has never seemed so bleak for social change groups now that established agencies—many of which are being forcibly weaned off the government grant spout—are also madly scrambling for private sources of bucks.

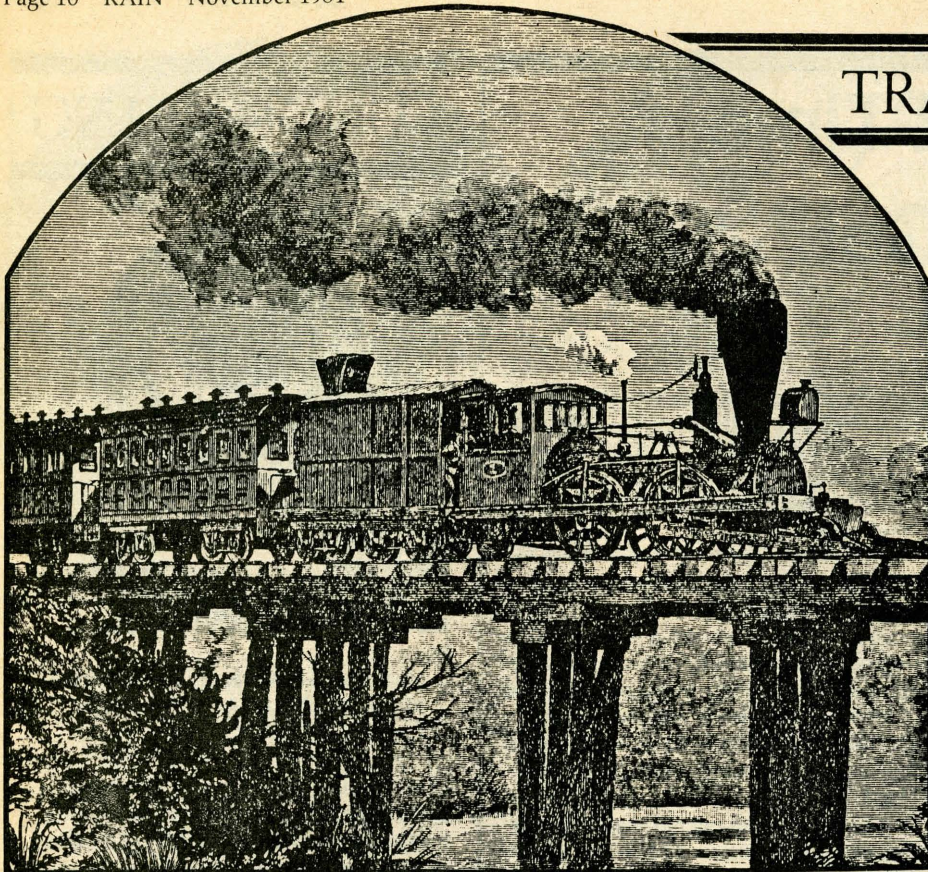
Don't give up trying yet! The 1981 *Grantseekers Guide* contains over 100 foundation- and corporate- giving programs particularly interested in funding change-oriented projects from grassroots groups. The Guide is the successor to the *Directory of Change-oriented Foundations* published by the Playboy Foundation. An in-depth profile of each national or regional grantmaker is provided as well as a useful index broken down by states. A variety of short introductory chapters are also included on topics such as "Proposal Writing Tips," "Gaining Tax-Exempt Status" and the "Potential of Corporate Giving." Finally there's a good annotated bibliography and listing of fundraising and technical assistance resources. The National Network of Grantmakers—a voluntary association of individuals involved in organized grant-making and sharing a commitment to social and economic justice projects—plans to update the Guide in 1982 based upon comments from their grantseeking constituency.

My fear is that too many of the too few responsive funding sources listed will be undated with good proposals they'll be unable to fund. There still is a great need for community, self-help groups to gain entry into the traditional private sector. Given the new federal tax incentives, corporations can now give up to 10 percent of their pre-tax net income to non-profit organizations. Nevertheless, the *Grantseekers Guide* is a highly recommended research tool for any serious community-based fundraiser. —SR



From: *Your Body Works*

TRANSPORTATION



Train Trips: Exploring America By Rail, by William G. Scheller, 1981, 254 pp., \$7.95 from:

The East Woods Press
East and McMillan Publishers, Inc.
820 East Blvd.
Charlotte, NC 28203

If you think trains are an appropriate form of transportation that ought to be revived in this country, try voting with your pocket-book next time you go traveling. This book will help. It offers a brief history of modern passenger rail service in the U.S. followed by a description of the present system (Amtrak) and extensive notes on the cities that Amtrak travels to.

The travel notes would have a hard time competing with a standard U.S. travel guide since any book that attempts to describe the highlights of 40 major cities must do so sparingly. Still, the book should suffice for the person who plans to visit several cities by train.

What really makes this book worthwhile is that it succeeds in restoring to train travel some of the romantic charm that it had in the days when trains were given names like The San Francisco Zephyr, the Empire Builder, the Silver Star, and The Sunset Limited.

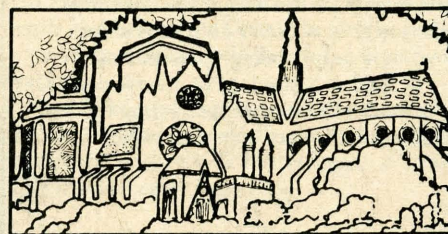
—SMA

TRAVEL

A Pilgrim's Guide to Planet Earth #2, edited by Parmatma Singh Khalsa, 1981, 320 pp., \$8.95 from:

Spiritual Community Publications
Box 1080
San Rafael, CA 94915

If you're going to be traveling outside of North America, pick up a copy of this book to find out where the good bread and good



vibes are. You'll learn where to go in most foreign cities and towns to make connections with the New Age community there—bookstores, monasteries, restaurants, ashrams, foodstores.

For armchair travelers, the book conveys a wonderful sense of the specialness of each place. A puppy-dog-tail-wagging enthusiasm permeates the whole book. It looks good, too, with nice graphics and scattered inspirational quotes.

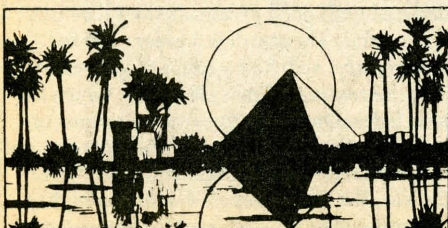
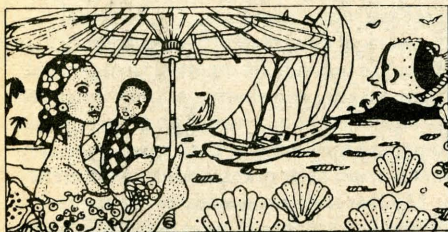
Areas of the world where tourists haven't made much of an impact get less coverage. China, for example, gets only one page, and such valuable resources as the New Alchemy—Farallones Institute China Tours aren't mentioned at all. —TK

"Murder of the Sunset Limited," by Frank Browning, pp. 16-24, June 1981 issue of *The Progressive*, (monthly, \$17/yr) from:

The Progressive
408 West Gorham Street
Madison, WI 53703

This article briefly but succinctly details the decline of America's passenger trains and asks the all important question "why are all other industrialized nations enthusiastically improving their passenger rail system while the United States is not?" The answer has something to do with the prerogatives of private railroad companies. (Railroads are nationalized in many of those other countries.)

Southern Pacific, in particular, catches heck for its hostile and uncooperative attitude towards Amtrak. —SMA



From: *A Pilgrim's Guide*



ARTS

The Woman Behind the Image, by John Stewart, 1981, 27 minutes, color, 16mm. Sale: \$450. Rent: \$45. (Request two weeks in advance with an alternate rental date.) Available from:

John A. Stewart Productions
P.O. Box 13607
Portland, OR 97213
503/236-9430

"Women and men—it's an impossible subject, because there can be no answers. We can find only bits and pieces of clues. Maybe, today, we're planting the seeds of more honest relationships between women and men."

—Duane Michals

The Woman Behind the Image is a film of the times. It is a documentary which cuts into the moment—in the way a still photograph does—and shows us a slice of one person's life—Judy Dater. Most serious photographers know her name and her work; others perhaps just know her work. Her images are striking, provocative and demand response from the viewer. Judy Dater is on the cutting edge of photography as much as Edward Weston was in his time or Imogen Cunningham was in her time. Her recognition is coming sooner in life, however. She's a young, beautiful woman—whose honest straightforwardness is attractive and powerful. Her photographs are the same. The film examines her life at a point when she and photographer Jack Welpott are separating. She is examining the role of work and relationships and shares her struggle to balance the two, so one does not exclude the other.

Through this dynamic of timing, the film has transcended its beginning as a documentary about a fine photographer, and has become a film which is humanistic and universal. Many levels of thought and feeling are aroused through the transitions from full frames of Judy's evocative portraits representing a spectrum of society that we do not usually see portrayed, to images of her sharing personal, honest and intimate feelings about her life, childbearing, and her work. John Stewart thoughtfully moves from photograph to photograph, each reflecting as much about Judy Dater as the things which she says in the film. The images require response and reflection upon our lives in a way that most photographs rarely achieve.

Weaving sensitive music, and precise movement from the photos to her shooting session, from conversations with her friends to her dialogue with the film maker, there is provided an experience that hits home for me in many ways. As a photographer, it inspired me to begin to photograph again; as a woman, it drew a strong feeling of connection in discovering that someone whom I have long admired is also dealing with work/art/rela-

tionships/childbearing and keeping them in balance. This is an exquisite film which nurtures the growth of our visions in these

times. —Linda Sawaya

Linda Sawaya is a former editor of RAIN.



Photo of Judy Dater by Filmmaker John A. Stewart © 1981



Imogen and Twinka

© Judy Dater

THE TREE ENTER

by Laura Stuchinsky

"Forests are the fastest-disappearing ecosystem on this planet. There's a lot of wealth there and it's real easy to exploit it. But once you exploit it, if you don't take some of the wealth and plow it back in, as with farming or any continuous operation, it's going to decline in productivity. It's going to go back in the ecosystem succession from coniferous forest to hardwoods to brush to brush-burn rocks to sandstone to desert."

—Gerald Myers (Forester) in *Tree Talk*

For centuries our technology has been based on a seemingly endless supply of wood—wood used for houses and tools, for railroads and bridges, for heating and cooking. Not until the late 1800's did the country diversify its nearly exclusive reliance upon wood. Despite the introduction of steel and iron, the demand for wood has continued to rise. After the Civil War, growing industry demands for wood prompted the timber industries to move west and south in search of bigger and more plentiful trees. By 1876 the largest lumbering operations had moved to the white pine forests of the Great Lakes Region—Michigan, Minnesota and Wisconsin. By 1947 the virgin forests of the West Coast, the redwoods of California and the Douglas fir of Oregon and Washington had become "logger's paradise."

As the industry moved westward, dozens of small companies collectively became a great industry, on a par with the railroad and iron industries, gradually consolidating into large holdings and sawmills. The tillable open land left in the wake of this westward movement became farmland, while the less-profitable land became open prairie.

With this reduced quality wood, it is projected that new housing will need to be replaced every generation.

Through the 1950's the demand for wood, particularly high after the post-World War II housing boom, absorbed the rapidly expanding production level of developing industry. By the 1960's the effects of this stepped-up production became apparent: privately-owned, old-growth timber was on the verge of becoming extinct.

In order to maintain the supply of timber, public lands held out of production thanks to the wilderness conservation movement of the 1900's (led by John Muir) were thrown open for harvest. By the early 1960's public land accounted for more than a third of the timber harvested in the United States. Forestry had become a matter of public policy, rather than the sole domain of private industries, with a conservationist movement once more on the rise.

In response to increasing worldwide demand for timber, inten-

sive forestry practices were introduced to maximize timber yields. Today, foresters are taught that it is the function of forest management to replace "old-growth" timber—upwards of 100 years old—with fast-growing trees. The rate of production in "overmature" trees begins to decline as decay sets in, while young trees are at the peak of their growth cycle. With this logic, old-growth timber has become a "waste of productive land."

Modeled after standard farming practices, intensive forestry management ("tree farming") is practiced through "even age" monocultures. Stands of a single tree are planted all at the same time to simplify management and harvesting. Clearcutting is an integral part of even age monoculture, creating a clean slate to begin a new forest. Site preparation follows the clear cut, accom-

Forestry Bey

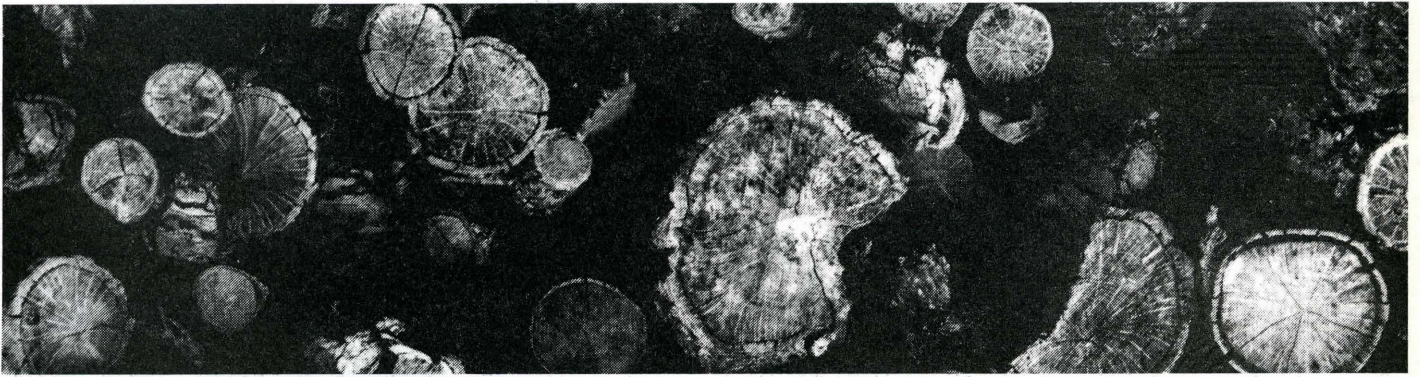
plished by burning, manually removing, or plowing the old growth into the ground. In the last 10-20 years, herbicides have become the preferred treatment for removal of less-profitable hardwoods and "competitive" brush that might shade intolerant species such as the Douglas fir. The rotation of harvest is accelerated by genetically improved, fast-growing seedlings that are chemically coated before planting with mixtures such as thiram or B.G.R (Big Game Repellent) to repel animals. Insecticides, pesticides, and artificial fertilizers follow.

Second-growth timber differs substantially from old-growth timber. Because of its size, old-growth timber is more difficult to fell, increasing the risk of harm to neighboring trees. It is also more often damaged by rot. On the other hand, the quality of second-growth is substantially poorer. The fine grain of old-growth takes centuries to develop. Second-growth trees are knottier, and yield a high percentage of sapwood, lacking the strength and durability of heartwood. The timber industry has adjusted to the poorer quality of timber being produced, gearing production towards higher percentages of glued and pressed products. With this reduced quality, it is projected that new housing will need to be replaced every generation.

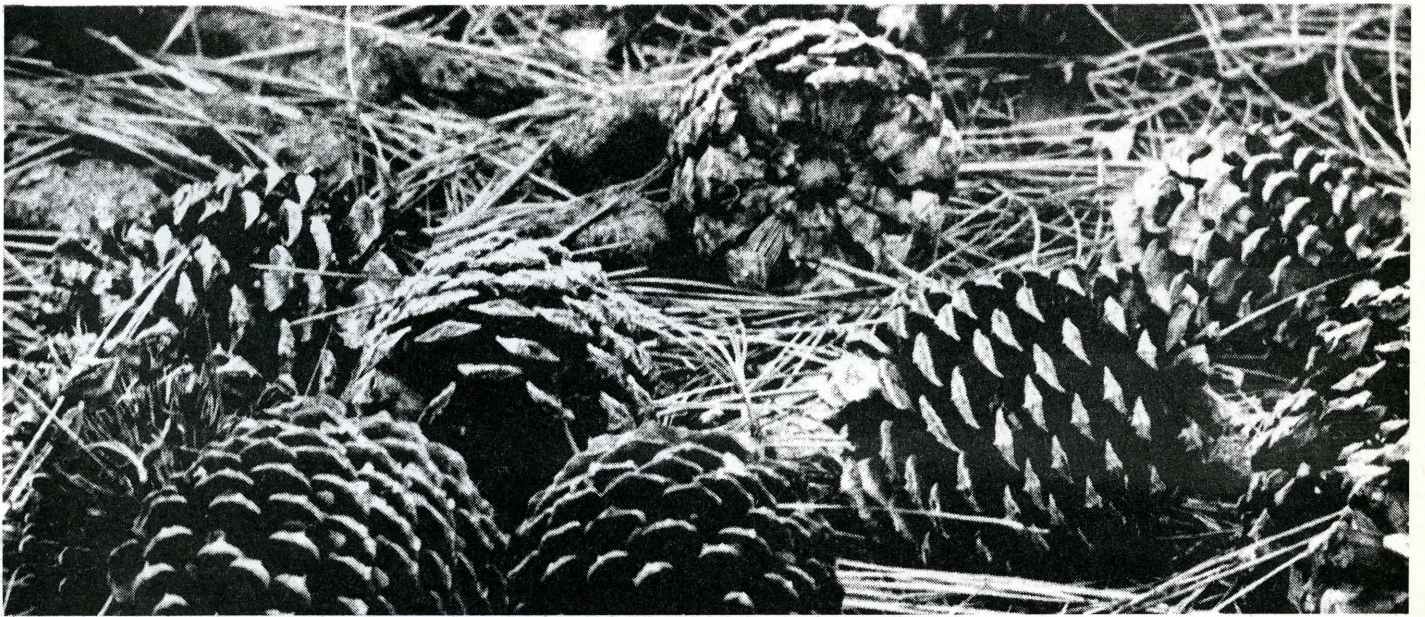
Criticism of new forestry practices has been mostly aimed at herbicides. Yet herbicides are symptomatic of a far greater problem: poor forestry management. Selective harvesting techniques which degenerated into "high grading" (taking the best trees and leaving the rest), as well as extensive clearcutting and an increase in wild fires, created millions of acres of unproductive forest land dominated by brush. Not until 1976 and the National Forest Management Act was there a concerted effort to restock these problem areas. Phenoxy herbicides have been introduced as a preferred method of preparing land for reforestation.

The price, many ecologists argue, for high-yield, intensive management is in the long-term productivity and survival of our forests. Pure stands of single species are rarely found in nature. A basic ecological principle is that genetic diversity creates stability. Single stands of species, particularly those exposed to constant pesticides and insecticides, become more susceptible to infestations and disease as more resilient strains of bacteria and animals develop. Reduction in seed diversity, through scientific manipulation of preferred species of trees, holds no guarantee that the fast-growing varieties will produce a genetic line better adapted to environmental

ERPRISE SYSTEM



yond Herbicides



stress than what has evolved naturally over millenia.

Studies of modern agriculture conclusively demonstrate that monocultures cause erosion problems, deplete soil nutrients and encourage weed proliferation, all leading to greater dependencies on artificial supports. Our forests (and farms) are among the most productive in the world, but at a substantial cost. Millions of tons of top soil are lost to erosion each year through clearcutting (exposing the soil to wind and water), roadbuilding and landslides. Fires, both natural and intentional, volatilize over 90 percent of the nitrogen in the soil. Rapid forest rotation, accomplished through brush-killing herbicides, eliminates the soil's natural recovery cycle. Foresters have become caught up in control rather than prevention, literally "losing sight of the forest for the trees."

"It started right here when the county sprayer was spraying this roadside with a hose, right where my kids were fishing. Nobody paid any attention to the spraying. We thought it might be for mosquitoes, . . . nobody even knew what it was used for. The sprayer insisted it was safe and only killed plants, but there were our kids, already sick to their stomachs and eyes burning. . . . We wanted to believe him. Nobody wants to believe their kids have been poisoned. But when they were really sick that night and when we came down to the river the next day and everything was dead . . . everything. The songbirds in their nests, and the fish floating belly up, the ducklings washed up against the shore, the crayfish, everything. I mean it was appalling. We called them up, 'cause we thought they made some horrible mistake and put the wrong thing in that truck and they said: 'Oh no. Oh no, it's just a coincidence. It couldn't be the spray. It only kills plants.'"

—Carol Van Strum

Founding Member of CATS (Citizens Against Toxic Sprays)—OR

Each year more than 40 million pounds of phenoxy herbicides are used to kill unwanted vegetation on roadsides and along power lines, on rangelands and farms, in forests and on school yards across the United States. Some of the phenoxy herbicides that have been used in forestry include 2,4,5-T, 2,4-D, Silvex, Roundup, Krenite, Picloram, Atrazine and Amitol. Different formulations are more effective on particular "target" species, but most grasses, conifers and certain legumes are fairly resistant. Application methods for herbicides vary according to topography and target species. In the South most spray is applied on the ground, while aerial spraying is more common in the hillier regions of the West. Drift from aerial spraying has been noted as a problem; coastal air currents can carry the spray over 22 miles. The University of Washington has been studying extensive damage to grape crops (grapes are particularly sensitive) over 80 miles from the spray site.

Phenoxy herbicides function by attacking the hormones which regulate cell growth, causing the plant to grow abnormally and then die. Aside from its own toxicity, many of the phenoxy herbicides contain contaminants, unavoidable byproducts of their manufacture, that are among the most deadly chemicals known to humankind.

TCDD, or dioxin, is capable of producing lethal and sublethal chronic effects (such as kidney abnormalities, cleft palates, clubfeet and congenital hip deformities) in dosages measured in parts per trillion. Recent research at Australia's Monash University in Clayton, Victoria, reported in the *Los Angeles Times*, has shown that sensitivity to herbicides' toxic effects varies. Overall, their study concludes that humans appear to be three times more sensitive to dioxins than baby chickens or rats. A representative of Dow Chemical, manufacturer of 2,4,5-T, has acknowledged that the company was aware of the presence of dioxins in 2,4,5-T as early as 1964, but argues that if used properly the risks are so "infinitesimal" that it is not a practical consideration. Because dioxin is toxic at such low levels, has no antidote, and appears to accumulate in body fat, opponents—including well-respected scientists—feel that no safe level has been determined. Several studies, including one in which Dow participated, concluded that dioxins have now entered our food

chain.

At the present time, 2,4,5-T and Silvex are undergoing cancellation hearings in Washington, D.C. Midway through the trial, Dow and the EPA have requested a recess to negotiate a compromise. The chance of 2,4,5-T and Silvex becoming available for commercial use once again is strong, due to current administration attitudes. Meanwhile, new research on 2,4-D (the most heavily used herbicide on farms and forests) points to the dangers of this formulation as well. A report by the South Okanagan (Canada) Environmental Coalition, *The Other Face of 2,4-D: A Citizen's Report*, (See RAIN IV:10:16), the first major review of scientific literature written for laypeople, indicates that:

- The U.S. Food and Drug Administration, the Canadian Food



Laura Stuchinsky

and Drug Directorate and the Dow Chemical Company all produced test results on 2,4-D showing that 2,4-D, its various formulations and one breakdown product produce birth defects (teratogenic effects) in mice, rats and hamsters. The authors assert that mice are good indicators of teratogenic potential in humans.

- It has been discovered that 2,4-D can contain the potent HCDD, TCDD and other higher isomer dioxins (whose effects are largely unknown).

- Insect pests have been shown to increase in 2,4-D treated crops and some plant diseases may become more prevalent. "In general, 2,4-D reduces the overall health of the environment to which it is applied."

A mixture of 2,4,5-T and 2,4-D made up the controversial Agent

Orange. Used heavily as a defoliant during the Vietnam War, twenty years later much of the five million acres sprayed remains barren. The incidence of miscarriage and birth defects in those areas is markedly higher than in the rest of the population. United States servicemen exposed to the defoliant are experiencing a variety of disorders, including a high percentage of cancers and birth defects in their offspring. During the War, objection to the use of Agent Orange by the scientific community was discredited as "emotionalism" or "essentially political statements against the War." Today, similar objections can be heard. "We're sick and tired of innuendoes and hysteria about the use of pesticides," says Stan Timmerman, representative of the Oregon Wheat Growers' League. "People are crying wolf without any scientific facts and this is grating on us farmers who use the stuff safely every day."

From a political perspective, Jack Early, representative for the National Agricultural Chemicals Association, feels that the EPA, which registers and regulates chemical use in the United States, has taken an "adversary role," placing "too much emphasis on risk." Herbicide opponents, on the other hand, feel that the EPA has been much too lax. *Who's Poisoning America* (see access this issue) relates Dr. Melvin Rueber's experience with the EPA. Considered one of the leading pathologists in the country, Dr. Rueber was a former employee of the EPA responsible for reviewing safety data on 23 registered pesticides, including 2,4-D. Finding the quality of the submitted reports poor, he did further research on his own and became convinced that most of the pesticides, including 2,4-D, were carcinogens. The officials to whom he reported his findings did nothing with his report; the 23 pesticides are still registered and available for use. He resigned in protest.

A commonly heard complaint of herbicide proponents concerns the use of anecdotal evidence refuting the safety of herbicides. Individuals experiencing negative effects are often discredited and their health problems attributed to their lifestyle, other factors or coincidence. In their defense it should be noted that a single testing for herbicide contamination can run between 30 and 2,000 dollars depending upon detection limits, chemicals tested and what the sample is—all of which must be independently financed. While anecdotal evidence does not provide a firm enough footing to remove a chemical from the marketplace, the sheer volume of circumstantial evidence seems to indicate some connection between exposure and various health problems:

- In 1978, a 12-year-old girl from Allegheny, Oregon developed a rare blood disease associated with industrial toxins after the area around her home was sprayed with herbicides. The herbicide was later found in her blood as well as the family's tap water. Someone in each of the five families that share the same water source have developed cancer.

- Over a two-year period ending in 1978 when the USFS was spraying 2,4,5-T and 2,4-D in Orleans, California, less than half of

the babies born were normal and healthy.

- A survey in Saskatchewan published by the National Research Council of Canada in 1978 revealed that 20 percent of the 3,000 farmers interviewed claimed they became ill with headaches, rashes, and nausea after routine applications of herbicides.

Numerous scientific studies support this evidence as well.

Despite this, many scientists, foresters and corporate executives still insist on the safety of herbicides. The obvious question is why are there such vast differences in scientific findings?

Legal loopholes, falsified evidence, and growing ties between industry and research universities (see box) have caused scientific evidence to be justly questioned. Continued use of the controversial herbicides have raised the question of who should bear the burden of proof. Should herbicides be considered guilty until proven innocent or innocent until proven guilty? Cost/benefit calculations by user groups, including the EPA, have concluded that herbicide use is a "reasonable risk." Mounting grass roots opposition has been most vocal on health issues, but increasingly sophisticated arguments have begun to challenge economic rationales as well.

"We called them up 'cause we thought they made some horrible mistake . . . and they said 'oh no, . . . it only kills plants.'"

Public protest in the 60's to increased harvests in the national forests gave rise to the Multiple Use Sustained Yield Act in 1972. This legislation requires that public lands be preserved for multiple use—recreation, wildlife, watershed and timber—and that the allowable timber cut not exceed what can be harvested "in perpetuity." If it can be shown that forest growth in the future can be increased, harvests today can be increased without violating this principle. This is called the Allowable Cut Effect (ACE). The technical problem with this approach is that the calculations are all estimates. If growth predictions are wrong we could be heading toward a timber shortage. This is exactly what some critics feel is happening. Herbicides have become an integral part of ACE predictions, enabling foresters to claim an "earned harvest factor" in their har-

There are three major sources of research data on chemicals—independent laboratories, university labs, and those owned by industry. A shift from public to private support of university research, the highest since 1920, has raised concern about the growing ties between industry and universities. Industry provides sorely needed financial support to flagging university budgets, while university research provides legitimization and indirect state support of industrial research and development. While the subject of objectivity is open to debate, it certainly seems that university-based research may be influenced by this increasing interdependence.

Subtle interpretations can also have a substantial impact on scientific findings. Research conducted by Dow scientists drew conclusions that directly contradicted those made by independent scientists using the same data. Dow researchers refused to conclude that 2,4,5-T leads to birth defects because of a technical interpretation of the term teratogenic (birth-defect forming). *Serious* birth defects are defined by Dow (*Science*, April '71 "Dow Redefines Word it

Doesn't Like") only as those that interfere with the ability of the offspring to survive. Congenital malformations such as cleft palates, mental retardation, or six-fingered hands are not serious birth defects by this definition.

Lastly, private research facilities, such as the Industrial Biotech Laboratories (IBT), have also been found lacking. In 1977 the FDA discovered fraud in health effects test data submitted by IBT. A review of over 200 chemicals found a majority of the tests invalid. None of the chemicals under review have been re-registered though most have remained on the market. What is more, EPA documents uncovered by *NCAP News* (the Northwest Coalition for Alternatives to Pesticides) noted deficiencies in over 25 labs while the destruction of records, reports and other documents by another 22 make it impossible to determine the accuracy of those laboratories' work. The investigation covered both independent and industry-owned labs.

vest calculations. Practices such as genetic improvement and fertilization are also added to the calculations. There have been no long-term studies done on the effects on conifer growth to substantiate these claims, nor are any negative impacts accounted for in the ACE factor.

ACE is calculated not only on increased growth of seedlings, but on reforestation methods; 100 percent of the trees planted are assumed to survive in calculations for yield projections. Recent research by Groundwork, a non-profit forestry research organization in Eugene, Oregon, refutes this assumption. The group notes that full stocking may be the exception rather than the rule. "It's possible that by age three or four only 50 percent or less of the seedlings planted on the site will have survived." Harold Horowitz, a Groundwork staff member, comments that "allowable cuts based on assumed benefits, rather than actual measurement of conifer growth after treatment . . . adversely affect the concept of 'sustained yield,' and in the long run could damage the economic stability of rural communities and the entire forest products industry in the region."

The economic impact of the ACE and alternatives to herbicides have received mixed reviews. Paul Merrell, long-time activist with CATH (Citizens for Alternatives for Herbicides, Washington) and a member of the steering committee for the National Veterans' task force on Agent Orange, points out that the projected ACE directly translates into jobs. "What they have done is pumped up the allowable cuts before they've even got the stuff sprayed, on the expectation that they are going to get to spray and that it's going to work. What they're saying, without coming right out and saying it is: 'Hey, we've already raised that allowable cut, we've already got it set artificially high, and if you call us on that we're going to have to reduce the size of the allowable cut, and all these people will be out of work.'"

The Oregonians for Food and Shelter (OFS), a pro-herbicide educational organization with financial ties to the forestry industry, projects that the aerial ban of forest spray applications, combined with additional ground application restrictions, would cost Oregon's economy \$159-\$282 million annually. "Job loss in Oregon, even after accounting for the increased use of manual labor, would amount to 3,276 to 5,923 jobs."

Figures cited by opponents contradict this bleak scenario. The California Economic Development Department determined that hiring the people to do manual work in lieu of spraying would increase the production costs of timber by less than one percent (*Who's Poisoning America*). Research by Groundwork supports this conclusion: "If preference were given to alternatives to aerial treatment where feasible, a drastic reduction in aerial sprayed acreage would result, with little to no loss of timber yield. *In fact timber yield would probably be higher* [my emphasis] because the more specific treatment methods are also more productive in the long run."

Another widely held contention, one promoted by OFS, is that there are no practical alternatives to herbicides. "For reasons of costs, job loss, ineffectiveness and job safety, manual alternatives to herbicides in forest management are considered unworkable." Research and experience by forestry workers seems to indicate otherwise:

- A pilot project by GOATS (Group for Organic Alternatives to Toxic Spraying), a forestry collective in Northern California, and the Forest Service determined that manual brush clearing is a cost-effective alternative to herbicides in addition to creating jobs when a variety of tasks such as stream clearance and erosion control are done in addition to conifer release.

- Rick Kovens, a member of a reforestry cooperative in Oregon and coordinator of Northwest Forestry Workers Association, challenges the notion of exorbitant costs for manual release. Manual methods, he asserts, have proven quite moderate and, if anything, have dropped in costs. Chemical preparations, on the other hand, have increased in cost.

In response to criticisms of high health risks for manual methods,

NWFWA claims that over a four-year period "they . . . experienced no partial, total, temporary or permanent disability." This is in contrast with aerial spraying, which carries the risk of both aviation and the as yet incalculable health risks of herbicides.

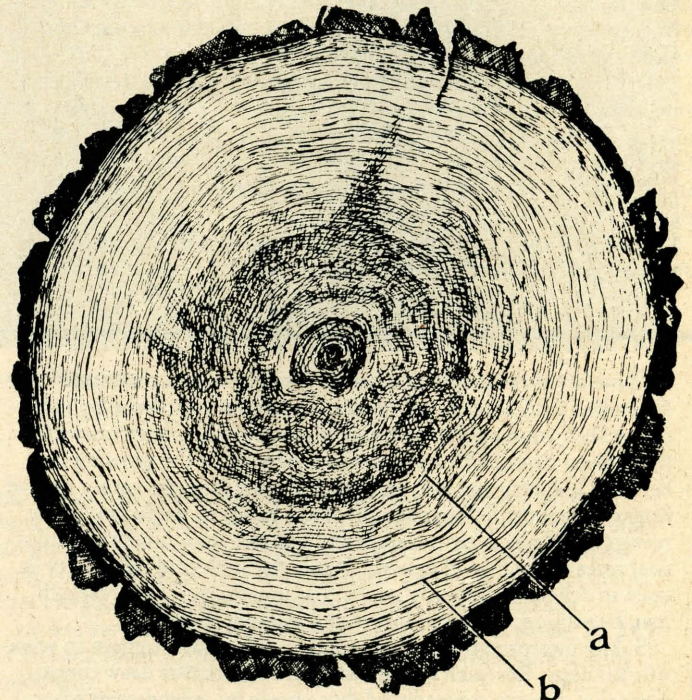
Jan Newton, an economist and director of research at the Center for Labor and Natural Resources in Eugene, served as economic consultant to the EPA in the area of economic benefits of herbicides. In December of 1979 Jan published the second of a two-part report (see access) analyzing the arguments and data supporting herbicide use. Her conclusion is that the existing body of scientific research on herbicide use, whether due to lack of evidence, faulty assumptions, or poor research, does not justify aerial spraying of herbicides on the grounds of cost-effectiveness, increased employment or good forest management. Her controversial report concludes that:

- The cost of herbicides are grossly understated and manual costs exaggerated.
- "Nary a shred" of field evidence exists to prove that aerial application increases conifer growth.
- There is no evidence of serious injury or accidents from contract work while, alternatively, "there is some evidence of hazards to workers from entering recently sprayed units."

Recognizing both the health hazard as well as the improved employment opportunities that might be gained by switching from chemical to manual forestry methods, the International Woodworkers of America is considering support of legislation (in Oregon) to ban or curtail the use of herbicides.

Alternatives to present harvest techniques currently exist and are being tested. According to estimates by NCAP (Northwest Coalition for Alternatives to Pesticides), in the past few years about \$1,000,000 worth of work has been awarded by public agencies for alternatives to herbicides primarily for cutting or pulling brush. One unusual example is a three-year study currently under way at Oregon State University, using sheep to remove unwanted brush on a clearcut site. The first results of the study seem to indicate success.

A growing number of concerned forestry workers and foresters



When should this tree have been cut?
(a) economic maturity (b) productive maturity

While 2,4-D is the most widely-used herbicide on the market today, there is a tendency for its users to switch to lesser known chemicals as the going gets hot. Roundup, Krenite and Garlon (2,4-DB) are some examples of herbicides that are coming more into use. It is possible to gain public information on these and other chemicals in university libraries, but the majority of information has never been published and remains a trade secret. Using the Freedom of Information Act citizens can obtain additional information, but with the new administration this avenue of information is also becoming restricted.

"I think the one thing the Congressmen in general don't realize is that it's very easy for them to say, 'Yes, the public should have access to this,' and pass a law but do not comprehend that the average . . . citizen cannot afford to go to Federal Court to get the information so the companies and the agencies get away with not providing it because no one can take them to court."

—Carol Van Strum

Here is how to get that information.

Using the Freedom of Information Act: A Step by Step Guide, by the Center for National Security Studies, 1981, 19 pp., \$1.50 plus \$1.00 per order for postage and handling, from:

Center for National Security Studies

122 Maryland Avenue
Washington, DC 20002

Perhaps no other laws on the books have been so generally useful to the public as the Federal Freedom of Information Act (FOIA) and the Privacy Act. Using these acts, citizens have obtained classified information, blocked the implementation of federal programs for failure to publish notice in the Federal Register, persuaded corporations to admit they had misinformed the public, and brought civil service charges against corporations and agencies responsible for withholding information.

As the title suggests, the guide clearly explains how to use this valuable legislation; how to determine which document you want, what agency to write to, how to write an appeal or get congressional help and how to file a suit if denied information. Under the FOIA, the burden of proof is on the government. Citizens can collect attorney's fees (even if they don't use an attorney) if a suit is filed and won. Because of the current administration's policy of denying access to information, many public interest groups will undoubtedly begin to find a source of funding through filing FOIA suits and collecting legal fees.

This guide is an essential tool for the layperson. If you need the original sourcebook, ask the Center for a copy of *Litigation Under the Freedom of Information Act* (6th edition), \$25 for institutions, \$10 for (c)3 and (c)4 tax-exempt organizations and individuals, or, if you have a dirt poor story, \$3 plus UPS delivery. —Paul Merrell

are attempting to negotiate a path, between the hard-line environmental preservationists and the industrial tree farms, that emphasizes stewardship as well as profit. Ray Raphael, author of *Tree Talk* and a timber grower himself, calls the movement "holistic forestry" while others simply call it common sense. Rick Koven of NFWFA describes it as "site-specific forestry." "Good" forestry management would involve workers more in decision-making, emphasize labor rather than capital-intensive methods, and decentralize forest management and planning. Other foresters emphasize conservation, transforming less profitable woods into usable products, salvaging lumber for reuse, and utilizing wood chips, brush and sawdust for fuel and erosion control. Selective cutting, with an eye toward prevention of high grading, has been demonstrated as a cost-effective alternative to clearcutting—despite arguments to the contrary. Staggered growth, crop rotation and intercropping, particularly with alder, have been suggested as methods to reduce erosion and improve soil conditions.

The time-tested experience of this new breed of forest workers and foresters is creating a vision of forestry management to work toward. Yet more than vision is needed. Structural obstacles impede progress toward these goals.

"One of the key points is that this whole controversy exists because the land was abused in the first place. The real solution comes when we begin adjusting our harvesting techniques to reforestation needs rather than the other way around."

—Paul Merrell, Citizens for Alternatives to Herbicides

Questioning herbicide use strikes at the very heart of modern agriculture and forestry. Mere mention of the topic is enough to draw bared teeth and close doors. (At the time of this writing Georgia-Pacific is refusing to grant interviews to "environmental" groups.) Phenoxy herbicides have become a symbol of a larger battle of how our forests and farms are to be managed and the expansionist principles upon which our economic system rests.

Two key figures in the herbicide debate are private industry and the government. The timber industry operates under the same constraints and guidelines as any other profitable business. Money

invested in timber must bring a return high enough to offset operating expenses, interest rates, taxes and the cost of maintaining a forest over several decades. Each additional year that a company must wait to harvest its timber, the higher the return must be to offset escalating costs. Extra costs must be minimized unless it greatly increases the rate of return. It is because of interest calculations, Raphael explains, that the "economic maturity of timber is realized at 36 years while "biological maturity" (see illustration) is not reached until 64 years of age. Productive maturity (old-growth timber) does not occur until still later.

Corporate executives are less concerned with long-term gains

If growth predictions are wrong we could be headed towards a timber shortage. This is exactly what some critics feel is happening.

than with immediate cash flow. A fast bookkeeping turnover of tree crops is preferable, although the long-term productivity of the forest is sacrificed. The assets are in timber, not in land. The problem is more than a moral one; there is no economic incentive to practice quality forestry.

While Smokey the Bear may be concerned about forest quality and preservation, the performance of the Forest Service contradicts that image. "National harvesting quotas," states Raphael, "are determined by the state of the economy, the rate of employment, the demands of household construction . . . and other political and economic variables." Decisions that affect the Pacific Northwest, for example, are often made by administrators in Washington,

D.C. who have never seen the forests they are governing. In housing they call that absentee landlordism! An endless bureaucracy of inspectors and overseers alienates forest workers who resent having so many bosses that, despite their presence, are powerless to enforce compliance of regulations. A pay scale that is determined by task rather than results encourages the use of shortcuts rather than quality work. Yet despite its shortcomings, government forestry agencies are in an opportune position to effect substantial changes in forest management as public lands account for over a quarter of the wooded lands in the nation and over half the standing saw timber.

While it may also be used to hasten deforestation, the current energy and economic crisis provides strong incentive for a well-bal-

anced system of forestry management. An emphasis on labor-intensive methods, rather than herbicides, would *reduce* the costs of production, bring a higher return on investment spread out over the harvest cycle and create sorely needed local employment opportunities. The world demand for timber could be met through maximizing output rather than taking a single product approach.

Increased public awareness and a new breed of forest managers are creating the conditions for change that may force industry and government, foresters and farmers to view the land as a resource as much as what is grown on it. "There's still a lot of money to be made exploiting the land," notes forester Gerald Myer, "and there's not a dime to be made repairing it. It's enormously shortsighted. Can't we afford healthy land?" □□

Herbicide Access

Tree Talk: The People and Politics of Timber, by Ray Raphael, 1981, 287 pp., \$12 from:

Island Press
Star Route 1
P.O. Box 38
Covelo, CA 95428

Midway through writing this article I stumbled across *Tree Talk* in a local bookstore. In the days that followed the book became my constant companion, read between bites of food and bus stops while its margins quickly filled with notes. Raphael seemed to echo my own strongly held conviction that there is a need to move beyond the time-worn, encrusted battle lines of loggers and environmentalists. His book is an attempt to move that dialogue a step further.

Speaking through the voices of old-time loggers, corporate executives, small timber land owners, and forestry co-op members, Raphael conveys an intimate picture of the evolution of forestry. From handsaws to computers, he traces the gains and losses of modern forestry and the emergence of a new brand that blends some of the old with the new. Vignettes on European forestry methods, and an analysis of the structural constraints of the U.S. forestry industry—private and public—offer refreshing insight into the potential and politics of this vital resource. Occasionally Raphael wanders off on tangents that may delight the history buff but interrupt the flow of his presentation. His vision of a landed forester program is somewhat stilted but rests on some significant concepts.

Tree Talk stops at the vision, not attempting to tackle the strategies to set us there—another book in itself. Instead, brief sketches of what others are attempting are offered as suggestions. Unfortunately, beyond a brief bibliography, Raphael gives no references for contacting the groups mentioned or obtaining more specific information on their work—a serious flaw. Despite this, *Tree Talk* provides an excellent overview of both the problems and potential of forestry and the future of our woods. —LS

An Economic Analysis of Herbicide Use for Intensive Forest Management Part II: Critical Assessment of Arguments and Data Supporting Herbicide Use, by Jan Newton, 1979, 72 pp., \$7 plus postage from:

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

This is a thorough and penetrating analysis of the scientific research and economic justification supporting herbicide use. The second of a two-part report (see RAIN V:8:7 for Part I), Jan addresses many of the key issues in the herbicide debates: Is conifer release effective? How do the costs of herbicides compare with manual methods? What are the assumptions behind the Allowable Cut Effect (ACE) calculations? And, are health risks for manual methods higher than those for herbicides? The U.S. Dept. of Agriculture Forest Service, recently issued a 33-page rebuttal to Jan's report, but their point-by-point critique entirely misses Jan's most important criticism. If nothing else, she clarifies the need for more meticulous and long-term studies that can either disprove or prove the assumptions upon which the current herbicide program is based. Anticipating that her report would be controversial, Jan hoped that it might encourage public debate and more responsible research. It's clear that she was right on the first count; time will tell if she achieved the second. —LS

Who's Poisoning America: Corporate Polluters and their Victims in the Chemical Age, edited by Ralph Nader, Ronald Berstein and John Richard, 1981, 369 pp., \$12.95 from:

Sierra Club Books
530 Bush Street
San Francisco, CA 94108

Who's Poisoning America is an exposé of the corporate actions and attitudes responsible for widespread and increasing incidences of

chemical poisoning. The book begins with an overview of the expanding power of the chemical industry since WWII, the unresponsiveness of government agencies, and the scope of chemical-related environmental pollution that is rapidly reaching crisis proportions. Seven cases, written largely by the journalists who covered the events, document the origins of the incidents, the legal battles that ensued, the growing sense of public alarm and the victims of chemical hazards. The cases cover a wide range of chemical pollutants and geographic regions: industrial wastes in Love Canal, New York, herbicide spraying in Northern California, toxic contamination of animal feed in Michigan, and occupational hazards from industrial chemical production in Virginia.

In a concluding chapter entitled "We are not Helpless," Nader outlines legislative measures, local organizing strategies, and legal methods for defending ourselves against toxic poisons and corporate irresponsibility. *Who's Poisoning America* is a survey, rather than an in-depth analysis. You'll want to follow it up with more technical information, but what is presented is enough to grab your attention and move you to action—precisely what the authors had in mind. —LS

Tool Kit: Copy It! by Cheryl Savage and Paul Merrel, 1979, 21 pp., donation requested, from:

Citizens for Environmental
Quality
2737 25A St.
Clarkston, WA 99403

This short publication provides indispensable information for the novice and dedicated activist alike! What to do to stay unsprayed, how the legal process works, how to use the media and your elected officials, where to find information on herbicides and their alternatives, and how to get organized. A short list of national and regional information helps round out the package. Like the title says—use it and copy it for a friend. —LS

From: *Tree Talk*

Ray Raphael concludes *Tree Talk* with a strong call for a landed forestry program that would put more of the decision-making power back in the hands of the local forester, more integrally tied to the land. Utilizing site-specific forestry techniques, the forester would be paid according to how much wood was grown rather than cut. Following the same line of reasoning, NFWFA and Rick Kovens have been developing a proposal for a stewardship program with the BLM that would address some of the problems raised earlier.

The current procedures under which the USFS/BLM operate encourage the exploitation of migrant labor rather than drawing on the local community, pays by task rather than result, and contracts for piecework rather than an entire job. There is minimal quality control and no followup after the contract is fulfilled. In short, the government "rents bodies," offering little incentive for quality work.

The stewardship proposal is for a three-year contract with BLM to reforest a 500-acre unit of recently clearcut land. Rather than use a number of crews, the BLM will contract with one crew of 12 people for *all* work done on the site.

The NFWFA feels this type of structure can help stabilize the local economy, reduce administrative costs, and develop multi-skilled expertise in the crew. A percentage of the contract will be paid immediately after the trees are planted and at regular intervals afterwards proportional to the amount of growing timber. This revolutionary method would financially reward quality work by paying for results rather than rote tasks accomplished.

If the proposal passes through all the legislative channels it will be advertised on a competitive basis next summer. The BLM is making a farsighted step in risking this proposal, but if the NFWFA wins the contract, the experimental program will be exceptional on yet another count. NFWFA would fulfill the contract by manual methods rather than with herbicides.

For further information on the stewardship program, contact Paul Vetterick at the Oregon BLM office or Rick Kovens at NFWFA, 795 Willamette St., Rm. 310, Eugene, OR 97401.

PURPA People Heater

By DAVID MORRIS

Under the Public Utilities Regulatory Policies Act (PURPA) every state in the country is working out the price that you should be paid by the utility company for your own generation of electricity. They're trying to work out what the relationship should be between you as a producer and you as a consumer—what the relationship should be between millions of small power plants and a central grid system and a central back-up system. By 1990 there'll probably be as many as four million power plants in this country, but they won't be large power plants. Each one will be owned by a voter, and as a result you will have a very strong political constituency for decentralized power generation.

Now General Electric has in its laboratory a residential rooftop photovoltaic shingle. You put it on roofs just the way you would any shingle. It overlaps on the sides. You put nails on the top, and that makes the connection with the wires running under the eaves. G.E. is still in the electrical equipment manufacturing business but the size of its power plants has been substantially decreased.

What that means is that in the middle of the 1980's when you reroof your house you will not only be protecting yourself from the elements, but you will be using one of the elements and converting it to useful power within your own house.

Well, it used to be in this country that Social Security really meant social security. That is, it would protect us in our old age. What we have learned from Washington in the past six months is that that isn't true. When the inflation rate hits a certain level, the federal government will not permit us to increase our Social Security revenue income to match the cost of living. So this year the federal government is about to stop our getting 100 percent of cost

of living increases in our Social Security.

But there is a form of social security that we could give to low-income people and to the elderly. What if we gave them a photovoltaic device? Well, a typical rooftop of photovoltaics in 1985 will generate an average of \$1,000 revenue. We pay in Social Security \$3,000 today. One of the interesting things about photovoltaic devices is that energy prices rise faster than the rate of inflation. And the worse the geo-political situation in the world gets, the faster those energy prices tend to rise. So the real income level of that poor person and that elderly person will be going up faster than a cost-of-living increase. We might begin to think of using photovoltaics as Social Security payments.

In Washington over the past five years there have been studies done of how the Department of Defense could purchase 100 times our present production of photovoltaic devices and use them *economically* in remote military outposts. That is, the Department of Defense could buy them and save money and in the process could accelerate the maturation of the industry by several years.

Well, I propose that the Department of Defense buy them, but don't put them on remote military posts. Put them on the houses of the elderly and lower-income people. And what we'll be doing there will be giving them a revenue-producer that is tied to the health of the economy. The worse the economy is, the better an income and revenue producer that rooftop will be. □□

David Morris is director and co-founder of the Institute for Local Self-Reliance in Washington, D.C.

ACCESS

ENERGY

Home Retrofitting for Energy Savings, by Paul A. Knight, 1981, 364 pp., \$14.95 from:

McGraw-Hill Book Co.
1221 6th Ave
New York, NY 10020

Tired of high heating bills? Interested in caulking and insulating your house? Want to do the work yourself? The first step is to read a good book on energy conservation so you'll know what to do. Then, read this book to learn how to do it.

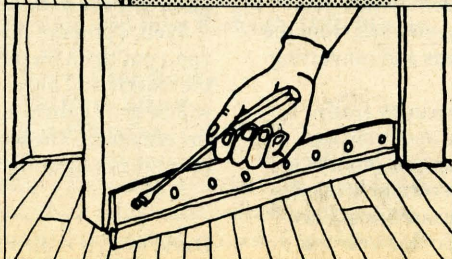
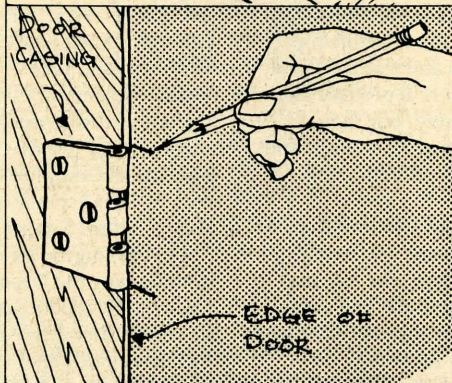
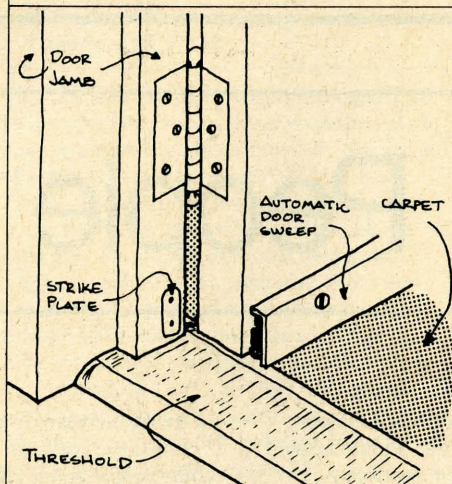
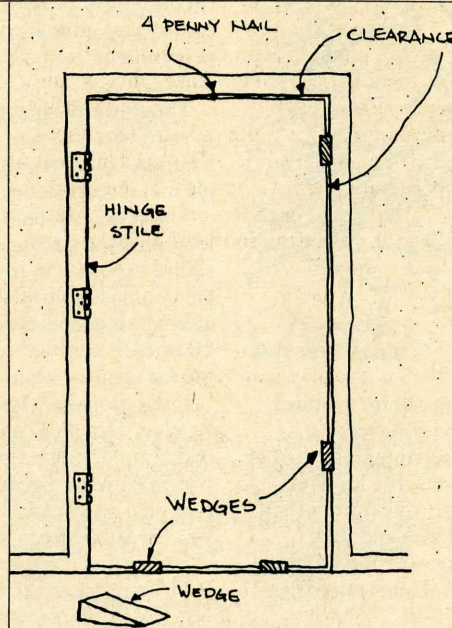
Home Retrofitting for Energy Savings takes you on a step-by-step tour of installing insulation on every conceivable surface in every possible wall. The instructions are complete, easy to follow and well-illustrated. Safety precautions are included at relevant points. They even talk about rental equipment for blown-in insulation. The fact that urea formaldehyde is included as a possible material is my only major criticism, as it shrinks and outgasses, and should be avoided. —Gail Katz

Photovoltaics: Sunlight to Electricity in One Step, by Paul D. Maycock and Edward N. Stirewalt, 1981, 232 pp., \$9.95 from:

Brick House Publishing
34 Essex St.
Andover, MA 01810

"We are entering a truly fascinating era in the history of electric power generation and distribution. Since 1882 when Edison ran wires down the street from the world's first commercial central generator station in New York City, the trend has all been one way—towards bigger generators and longer lines. Photovoltaics offers the first real opportunity to reverse that trend."

Co-authored by the former director of DOE's photovoltaics program, *Photovoltaics* is a very good overview of one of the fast moving dark horses in our energy future. Although not complete in every respect (particularly noticeable is its absence of a description of photovoltaic/fuel cell interface technology in general, and of Texas Instrument's innovative sprayed silicon/electrolyte process in particular), it is generally comprehensive, tightly written, and up to date. Maycock and Stirewalt cover the depth and breadth of the technology, from basic principles and manufacturing processes to current and potential applications, economics, and a glimpse of the potentially enormous impact



From *Home Retrofitting*

photovoltaics could have on how we view energy.

"It is a dramatic moment when post-industrial civilization is offered a new tool such as this and must choose how to apply it—whether to pick it up and test its abilities or to cast it aside. The test is whether collectively we have the acumen, the wit, and skill, and daring to put it to good use promptly."

My only gripe about this book is its rather single-minded obsession with the rapid implementation of electric vehicle technology (electric/fuel hybrids are scarcely mentioned). The authors go to great lengths to extol the virtues of replacing most of the nation's transportation stock with electric cars and trucks by 1991. The concept may be technically feasible, and, with cheap photovoltaics, perhaps even desirable. However, their treatment of the social, economic, and environmental issues raised by such a proposal tends to lack the hardheaded realism that is characteristic of the rest of the book. —KB

National Solar Energy Education Directory, Third Edition, prepared by the Solar Energy Research Institute (SERI), May 1981, 280 pp., \$5.50 from: Superintendent of Documents US Government Printing Office Washington, DC 20402

The best way to find an educational program suited to your needs is to talk to knowledgeable people in the field, then communicate directly with the school. Catalogues are helpful if you're still exploring and want to see the range of possibilities.

This book is as good a source as exists in print on solar education programs. Most of the normal architecture, planning, engineering, and physics degree programs and courses with a solar emphasis are here. In addition, I was happy to find several owner-builder schools listed, as well as vo-tech programs and evening courses. Arranged in a useful and readable format, the data provided on each course is all you'd want short of a syllabus and a critical evaluation. Furthermore, the index is excellent.

The data, however, is dated and not comprehensive. Information in the SERI book is current only to June 1980. I know of scores of solar courses in Portland, for example, but none are listed here because they're intermittent or new. I also know of courses and programs at other colleges that have been around for a while but didn't make it into this catalogue—Goddard College and the College of the Atlantic both have programs focusing on renewable energy. Partly this is due to the method of soliciting information: the colleges themselves, if they received a questionnaire from SERI, had to decide

whether or not they had "solar" courses. Thus, general courses like "Chemistry I" are included if the instructor deals with solar concepts at all. Some colleges list any course that mentions solar energy, whereas others won't include themselves unless they grant a degree in the subject. —TK

More Other Homes and Garbage, by Jim Leckie, Gil Masters, Harry Whitehouse and Lily Young, 1981, 416 pp., \$14.95 from:

Sierra Club Books
530 Bush Street
San Francisco, CA 94108

Anyone who started getting interested in small scale energy technology in the late 1970s will probably remember *Other Homes and Garbage* as one of the best introductions around. This new edition is better than ever, and the new material generally reflects the moves solar technology has made from scattered rural applications towards the mainstream of American society. There are excellent updated sections covering wind, photovoltaics, active and passive solar applications, waste handling systems and aquaculture. As before, the information is accurate, clear and remarkably comprehensive for a book that covers as wide a range as this one does. It's still one of the best. —KB

Simplified Methodology for Economic Screening of Potential Low-Head Small-Capacity Hydroelectric Sites, prepared by Tudor Engineering Co., 1981, inquire for price from:

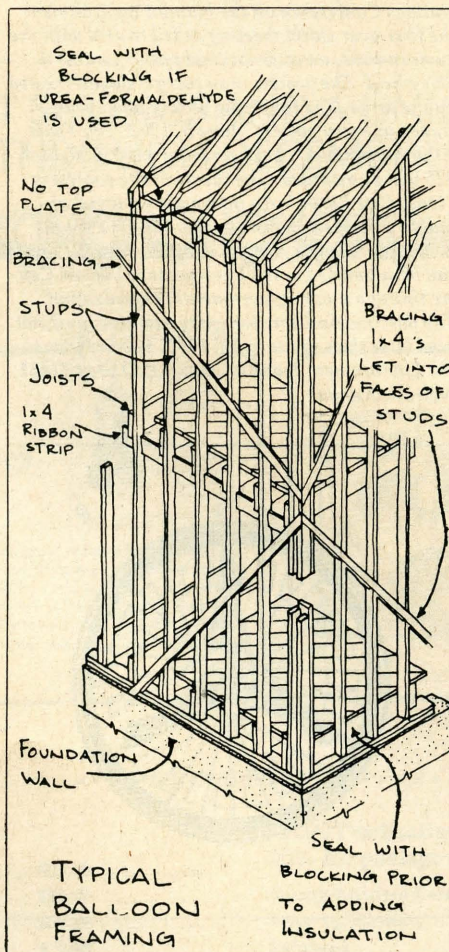
Electric Power Research Institute
3412 Hillview Ave.
Palo Alto, CA 94304

I almost didn't review this book. It comes from the Electric Power Research Institute, which keeps afloat by working for private utilities. From this point of view, "small-capacity" hydro is defined as sites with a capacity

of 200kW to 15,000kW. A single family might need a 2kW to 10kW system. My other problem with the book was the dry engineerese writing style.

A good case can be made, however, for using distributed community based power generation systems, especially those using renewable resources. They provide a small community with a local, controllable, self-sufficient power source. They provide the society at large with power that minimizes environmental degradation.

Putting aside the source and bias of this



From *Home Retrofitting*

study, I recommend this book for its presentation of some good basics for the economic evaluation of community-sized hydropower. The text is written for people who already know the basic concepts, although the appendices fill in the gaps for the uninitiated. Ballpark cost estimates for different basic configurations of dam and powerhouse, and good graphical techniques for determining the power from a site based on a known flow distribution or a known maximum flow and an estimated regional flow distribution are included. Finally, techniques for calculating the economic profitability (the EPRI bias) for the system are given.

Very simply, this is not a book that will be useful to many RAIN readers, but the few who may need it now know it's available.

—Gail Katz

We've Got the Power (slide-tape show), 1981, 140 color slides or filmstrip, 26 mins., \$70 (slides) or \$50 (filmstrip), rental (West Coast only) \$15.00 from:
Energy Education Project
American Friends Service Comm.
2160 Lake Street
San Francisco, CA 94121
415/752-7766

Here it is—one of the best energy slide shows I've seen anywhere. Whether Americans should continue to follow the "hard" energy path (nuclear power and fossil fuels) we've been on since WWII or adopt the "soft" energy path (renewable resources and conservation) is the question addressed by Amory Lovins, Barry Commoner, Winona LaDuke, Richard Barnet, Jerry Gordon, Dave McFadden, Judy Corbett, Mark Cherniak, Diane Thomas-Glass and others familiar to RAIN readers. They discuss what Davis, CA, Portland, OR, Franklin County, MA and other communities have done and can do to bring about a safe, clean, locally-controlled energy future. Included are a complete script and footnotes, plus an excellent study-action guide. Highly recommended for organizers and educators. —MR

RUSH

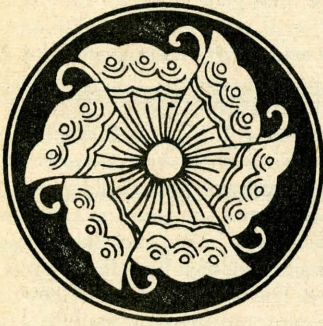
The Northern Rockies Action Group (NRAG), which has provided citizen groups with information and skills through publications on a wide variety of topics has been conducting training sessions in various parts of their region. The workshops feature training in nuts and bolts skills as well as introductions to the latest approaches for building strong grassroots organizations. On November 20-22 in Denver, Colorado Bruce Bal-

lenger, a nationally known expert in media strategies for citizen groups, will lead a training in media skills and public relations. This two and one-half day session will be the most thorough review of media strategies for citizen groups offered anywhere. The cost is \$75 per person. Contact NRAG, 9 Placer Street, Helena, MT 59601.



A passive solar workshop by the people who wrote the books: Doug Balcomb, Ed Mazria, and Susan and Wayne Nichols. The workshop will explore in depth the topics of programming, schematic design, design development, and construction. Passive Solar Associates has developed a unique 300-page workbook for this workshop to complement and parallel the workshop agenda, and it is available only through workshop participation. Passive Solar Workshop is being held November 9-10 in Chicago, November 13-14 in Atlanta, and November 30-December 1 in San Francisco. The registration fee is \$395, and class size is limited. For further information contact Sara Balcomb, Workshop Coordinator, P.O. Box 6023, Santa Fe, NM 87501, 505/983-1506 (mornings).

cont.—



Using imagery in the classrooms helps children to focus attention and to become aware that there are many ways to image and learn. The Centering Foundation near Portland, Oregon, offers a fall series of tools and in-training sessions in visual imagery for teachers and other interested learners. For a fall class schedule, write 13715 SW Brightwood, Beaverton, OR 97005, 503/646-6312.

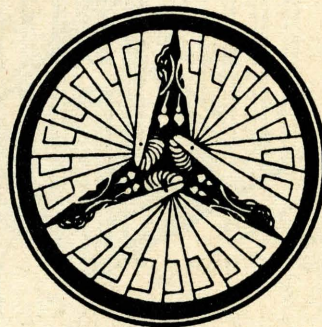
The third annual Alternative Energy Conference will be held at the Anchorage Community College, November 13-15. The conference will provide energy workshops, technical paper presentations and policy forums on energy-related issues. The goal of this year's conference is to provide information on state of the art alternative energy technology and provide a communications network for Alaskans involved in energy planning, use, and/or generation. For more information contact the Alternative Energy Resource Center, 1069 W. 6th Avenue, Anchorage, AL 99501, 907/274-3621.

The Farallones Rural Center in Occidental, California announces an opening in the Edible Landscaping Program. This is an opportunity to live at the Rural Center, a village-like atmosphere demonstrating solar energy, organic horticulture, and appropriate technology while participating in the edible landscaping program. This program teaches a holistic approach to sustainable, ecologically dynamic food production adjacent to the home with a focus on design, installation and demonstration of landscapes that combine vegetables, tree crops, herbs, soil improvers, windbreaks, pest control plants, and nutrient accumulators into biologically sound and aesthetically pleasing environments. An excellent opportunity for someone with little or no background in landscaping or tree crops. A one to six month involvement, available now. Fee of \$250/month covers food, housing and some program costs. For more information contact Robert Kourick at the Rural Center, 707/874-3060. (Please note: there will be two positions available for a one-month period as room and board exchange for assisting in the annual Tree Crops Order, January 1, 1982 through February 20, 1982.

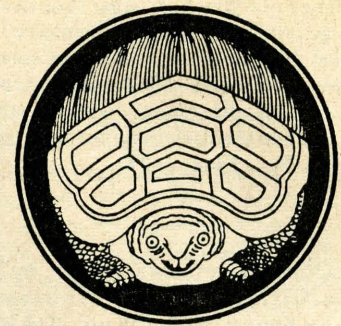
Four Season Residential Program offers an opportunity for practical training in bio-dynamic gardening and farming, animal husbandry, solar greenhouse horticulture, carpentry, forestry, and basic mechanics. A new program starts in January 1982 and runs through November. For detailed information and registration forms please contact The Rural Education Center, Stonyfield Farm, Wilton NH 03086, 603/654-9625.

A two-day workshop detailing the design, construction, and marketing of a site-fabricated solar air system will be held for builders, developers, architects, engineers, owner/builders, and allied building professionals. The workshops will teach the fundamentals and tricks-of-the-trade of site-built solar design and construction. The workshop will be held in New York City November 12-13, Kansas City November 16-17, and Denver November 20-21. To register, contact Tim Wesells at Enersource, Inc., Box 541, Peterborough, NH 03458, 603/924-3702.

To celebrate the 10th anniversary of the United Nations Conference on the Human Environment, the first-ever world meeting called to deal with the environment, an international poster contest is being held. The posters may carry a slogan created by the artist. The following phrase must be included in every poster: "June 5, 1982. Ten Years After Stockholm." Cash prizes of \$100, \$50, and \$25 will be awarded. The theme of the contest is "Only One Earth." An international panel of judges will select the winners in March 1982 in Nairobi where the poster will be displayed. Posters can be submitted to the Environment Liaison Centre through a non-governmental organization. The post-marked date for entry deadline must not read later than January 31, 1982. Send entries to the Environment Liaison Centre, P.O. Box 72461, Nairobi, Kenya.



Fifteen thousand people die of hunger daily; ten thousand of them are children. In the U.S., one out of every five persons is malnourished to some degree. On November 20 you can stand with the world's hungry by joining in the "Fast for a World Harvest." Fasting can change your point of view. If you give up eating for all or part of the day, you can help by sending your food money to Oxfam America, a non-profit international agency which funds self-help development programs in Asia, Africa, and Latin America, working with the poorest of the poor, with women, with refugees, and with the dispossessed. Oxfam began in England in 1942 as the Oxford Committee for Famine Relief. During the past 38 years, Oxfam has gained a global reputation for innovative yet realistic development aid on the grassroots level. Oxfam America receives no government funding, choosing to depend solely on contributions from individuals and groups. During the past six years, fasters have contributed more than \$1 1/2 million to Oxfam's self-help projects. For more information write Oxfam America, 302 Columbus Avenue, Boston, MA 02116.



The World Hunger Education Project will hold its eleventh "Politics of Hunger" Seminar/Praxis January 10-22 in Washington, DC. This popular series is designed to increase the understanding and effectiveness of active or potential leaders in the hunger, justice, and poverty fields. Participants in the seminar are given the opportunity to contact policy makers and organizations in Washington and establish direct connections with resource persons and agencies that can strengthen action programs back home. The program includes roundtable discussion with national and international food and development specialists; opportunities to expand knowledge, contacts, and leadership abilities. Fee for the two week seminar is \$250. Housing and meals are by separate arrangement. Enrollment is limited to 20. For an application write or call Susan Quarles, WHES, 2000 P Street, NW, Suite 205, Washington DC 20036, 202/223-2995.

November 15-17 in New York City the Riverside Church Disarmament Program will hold its fourth national conference on reversing the arms race, "The Arms Race and Us." Featured speakers include among others Richard Barnet, author of Real Security and Global Reach; Dr. Helen Caldicott, President of Physicians for Social Responsibility; Rev. Raymond Hunthausen, Archbishop, Seattle, Washington. There will be workshops on teaching disarmament, economics of militarism, mobilizing the religious community, feminism and militarism, and more. On November 17 the conference will take its appeal to the White House in their "most serious effort thus far to organize and strengthen the movement to reverse the arms race." Registration fee is \$30 with meals and transportation from New York to Washington separate. Write or call the Riverside Church, Disarmament Program, 490 Riverside Drive, New York, NY 10027, 212/222-5900.

The Interreligious Foundation for Community Organization is a technical and financial resource agency for local and regional community organizations. Founded by a group of activist clergy and lay community workers in 1966, the IFCO's mission is to help advance the struggles of oppressed peoples by assisting them in the development and perpetuation of viable community organizations. They are offering a series of intensive, eight-day skills training sessions devoted to practical fundraising and management techniques for staff and leadership of community organizations. These skills will be of special value as tighter government regulations and cutbacks accompany the declining economy. Tuition is \$600 per person, including room and board, all materials and training fees. For a complete schedule of locations, write to IFCO, 348, Convent Avenue, New York, NY 10031.



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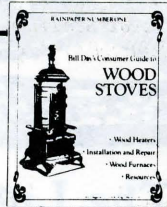
RAINPAPER NO. 1

Consumer Guide to Woodstoves

Bill Day

16 pp., Revised Jan. 1981, \$3.60

No matter how you split it, wood is re-emerging as an important factor in home heating. To help insure the wood energy transition is one committed to safety and efficiency, wood stove consumerist Bill Day has closely monitored the availability and reliability of these products. His newly revised and expanded *Consumer Guide* is a compilation of his articles in *RAIN*, covering the selection, installation and repair of woodstoves, wood cookstoves and wood furnaces. Included are helpful notes on fireplace retrofits and chimney maintenance. Essential reading for those of you interested in this revitalized energy alternative.



Urban Ecotopia Poster

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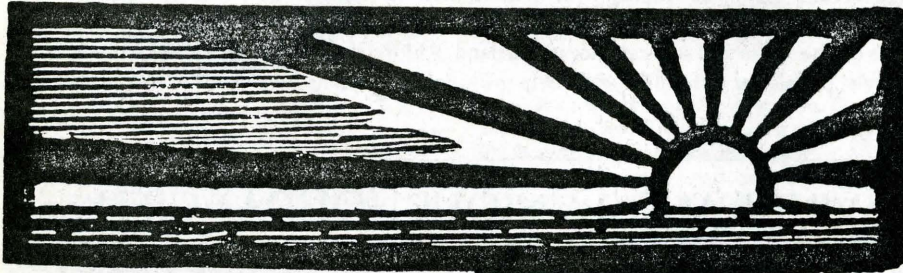
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Southern Appalachian Resource Catalog, Volume II, edited by Michele Lebar
Boone, 1980, 76 pp., \$5.00 ppd. from:
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Rt. 1, Box 71 A
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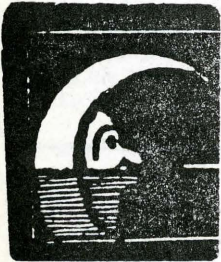
Visions of Oregon, southern Indiana, and western North Carolina feed my current fantasies of rural places to settle down someday amid forests and artists. I haven't been to the southern Appalachian region yet, but this catalog supports my visions. I sense a community here, concerned with craftsmanship and wise use of resources.

It's an easy read, developed to "guide the visitor as well as the resident to special places and creative people in the Southern Highlands." Short, informative articles on schools, arts and crafts, music, food, and solar energy are interspersed with pertinent ads and nice graphics. I especially enjoyed reading about the Little Mountain Pottery, Arden Rice Cakes, Bean Mountain Tofu, and composting toilets.

Be sure to look at this guide if you plan to visit the area. —TK

Walk While You Have The Light

by George Ellison



Do not neglect the winter months. Solitude is surer then. The soil and stones and trees will be there in somber intensity. Vision is not obstructed by curtains of green. The body of the land is laid bare and you will see the trail darting brown along the creek or tracing slow arcs above and below. The sheer grade of a trail has an entity that can be realized only in winter.

Essence arises from the manner of the coming and going. Go light. Don't walk fast. Praise the cold.

From: *Southern A.R.C.*



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