1-1-1978

RAIN

ECO-NET

RAIN

JANUARY 1978 VOLUME IV, NO. 4 ONE DOLLAR

Ancil Nance

INSIDE:

WHY BIG BUSINESS LOVES A.T.

SMALL GROUPS, BIG WINDMILLS

RAIN *access*

ENERGY

***Davis Energy Conservation Report*, April 1977, $10 from:**

Living Systems
Route 1, Box 170
Winters, CA 95694

We've reported at various times on the path-breaking energy conservation activities going on in Davis, California. Their new building code has achieved energy savings of 50 percent in new homes. Bicycles account for 25 percent of transportation mileage at a savings of 64,000 gallons of gas and $100,000 annually. Active and passive solar home designs adapted to the Davis climate have been developed and are in use by spec builders. Narrower and tree-shaded streets are being built. Overall electrical use per customer has decreased 8 percent in Davis since 1973, compared to a 4 to 5 percent increase in neighboring towns. Lots of interesting how-to information on enacting energy ordinances, feedback from builders, etc. —TB

"How Much Are Nature's Services Worth," by Walter E. Westman, in *Science*, vol. 197, Sept. 2, 1977, pp. 960-964, in most libraries, or write:

Walter E. Westman
Dept. of Geography
Univ. of California
Los Angeles, CA 90024

Via numerous, interesting examples, the author explains why measuring the social benefits of ecosystem functioning is both controversial and illuminating. Recommended for those into "net energy" and Howard T. Odum energetics theory. —LJ

***Landliving*, Michael Watson and Theresa McCloud, 1977, 14pp., $1 from:**

Landliving
Box 4736
Arlington, VA 22204

Essentially a delightful guide to personal, around-your-own-home land use awareness, this is a fine companion to Malcolm Margolin's *The Earth Manual* (Houghton Mifflin Co., 1975), and to John Brainerd's *Working With Nature* (Oxford Univ. Press, 1973). Practical ways of mapping your land's ecosystems and then enhancing them are outlined. —LJ

***What's Wrong with the Atomic Industry?*, 1977, $3.50 from:**

Public Interest Research Group (PIRG)
Box 19312
Washington, DC 20036

A compilation of cases of misfeasance, malfeasance and nonfeasance among atomic corporations, prepared as a desk reference for activists interested in the problems of nuclear power. However, this is so chock-full of short horror stories in mis-applied technology that radio stations and newspapers could use the items found in it as fillers in programs and in print. Ask for their list of other energy publications. —LJ

New York State Energy Hotline

Center for Energy Policy & Research
New York Inst. of Technology
Old Westbury, NY 11568
phone 516/686-7744

Local solar info is their specialty.

***Price of Power Update: Electric Utilities and the Environment (Technical Summary)*, Ronald White, 1977, $10 from:**

Council on Economic Priorities
84 Fifth Ave.
New York, NY 10011

Shows that increases in the use of coal to generate electricity have cancelled out improvements in pollution control in the electric utilities industry. Emissions at U.S. fossil-fuel electric power plants remained substantially unchanged over a five-year period. The study named the Tennessee Valley Authority as the heaviest polluter per unit of electricity generated among the 15 large utilities analyzed. Pacific Gas and Electric posted the best control record.

The 430-page study is based on data collected by CEP to assess pollution control at 119 coal, oil or gas burning power plants representing 24 percent of industry capacity. CEP examined each plant's and each company's output-adjusted (per Mwh) pollution emissions and their environmental record in CEP's 1972 study to rank current company pollution control performance progress over the *Update* period.

Pacific Power & Light is the highest ranked of the nine major coal-burning companies under study. The company had the lowest SO_2 emission rate of the coal-burning companies and the highest percentage of its generating capacity equipped with thermal pollution control equipment in the study. PP&L's last place rank for particulate emissions is due to the poor controls at its Dave Johnston plant (Wyoming), though high efficiency equipment has recently been installed at the plant to reduce its particulate output. —LJ

SOLAR

SUN DAY: May 3, 1978, the national solar energy observance day, for info and to be put on the mailing list, write:
Sun Day
Suite 1100
1028 Connecticut Ave., N.W.
Washington, DC 20036

In communities across the U.S., citizens are making plans to celebrate May 3, 1978, the former "Earth Day," to publicize, educate and learn about the world's only inexhaustible, predictable, egalitarian, non-polluting, safe, terrorist-free and free energy source. People are already planning solar fairs, conferences, teach-ins, sunrise services and political demonstrations. Write to see what you can start or with whom to link up in your town. We're gonna have a good time. —LJ

***The Helios Strategy—A Heretical View of the Role of Solar Energy in the Future of a Small Planet*, Jerome Weingart, 1977, available free from:**
Alternatives to Growth '77
Jon Conlon
Mitchell Energy & Development Corp.
3900 One Shell Plaza
Houston, TX 77002

Mitchell Prize Winner for 1977, it's interesting to read what a first-rank technologist and analyst comes up with when converted to solar energy. Weingart doesn't mess around. He goes right for a total global transition, as Denis Hayes & Amory Lovins have called for, but by means of an alternative lying somewhere between "small is beautiful" and "large is necessary," one which is compatible with both, the solar-hydrogen economy. The paper is especially useful for its 30 tables full of data, much of which further supports Hayes & Lovins. Four other prize-winning papers are also available: "Beyond the Profit Motive: The Post-Industrial Corporation," by William Halal, "The Choices in the Next Energy and Social Revolution," by Charles Ryan, "Towards a Sustainable-State Economy in the United Kingdom," by Andrew and David Gamble, and "Alternatives to Growth in Education: A Course on Physics & Society in Dutch Secondary Education," by Boeker and Eijkelhof. —LJ

ISES Northwest Regional Chapter to be formed.

Members of the International Solar Energy Society living in Washington, Oregon, Idaho, Wyoming and Montana voted, 26 to 14, for a regional rather than state chapter(s).

In addition, members voted for six to constitute a steering committee to form such a chapter. The six, who will meet at Rainhouse at 1p.m., Tues., Jan. 3, 1978, are: Doug Boleyn (Portland General Electric Co.), Kirk Drumheller (Battelle Northwest Labs), Jill Goodnight (Battelle Northwest Labs), Lee Johnson (*RAIN*), John Reynolds (U. of Oregon), and Ken Smith (Ecotope Group). Two Idahoans will also be invited to represent ISES members in their state. All ISES members will be kept updated on the outcome. —LJ

Ouroboros South Project
Continuing Education in the Arts
University of Minnesota
320 Wesbrook Hall
Minneapolis, MN 55455
612/373-5170

Word has come to us that the original self-sufficient house done by Dennis Holloway and his students at the Architecture Department is now "under new management." Within the past year equipment to monitor the passive and active systems has been installed, with results being published periodically. Check with them for details and for appointments to visit the house—$1.50 adults, 50¢ children. —LdeM

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

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

Typesetting: Irish Setter Printing: Times Litho

SOLAR CONTRACTORS' STANDARDS

Private industry has recognized the impact that solar energy is having on its future and is taking steps to insure quality work from its people. Recent evidence of this trend includes the publication of a set of installation standards for solar systems.

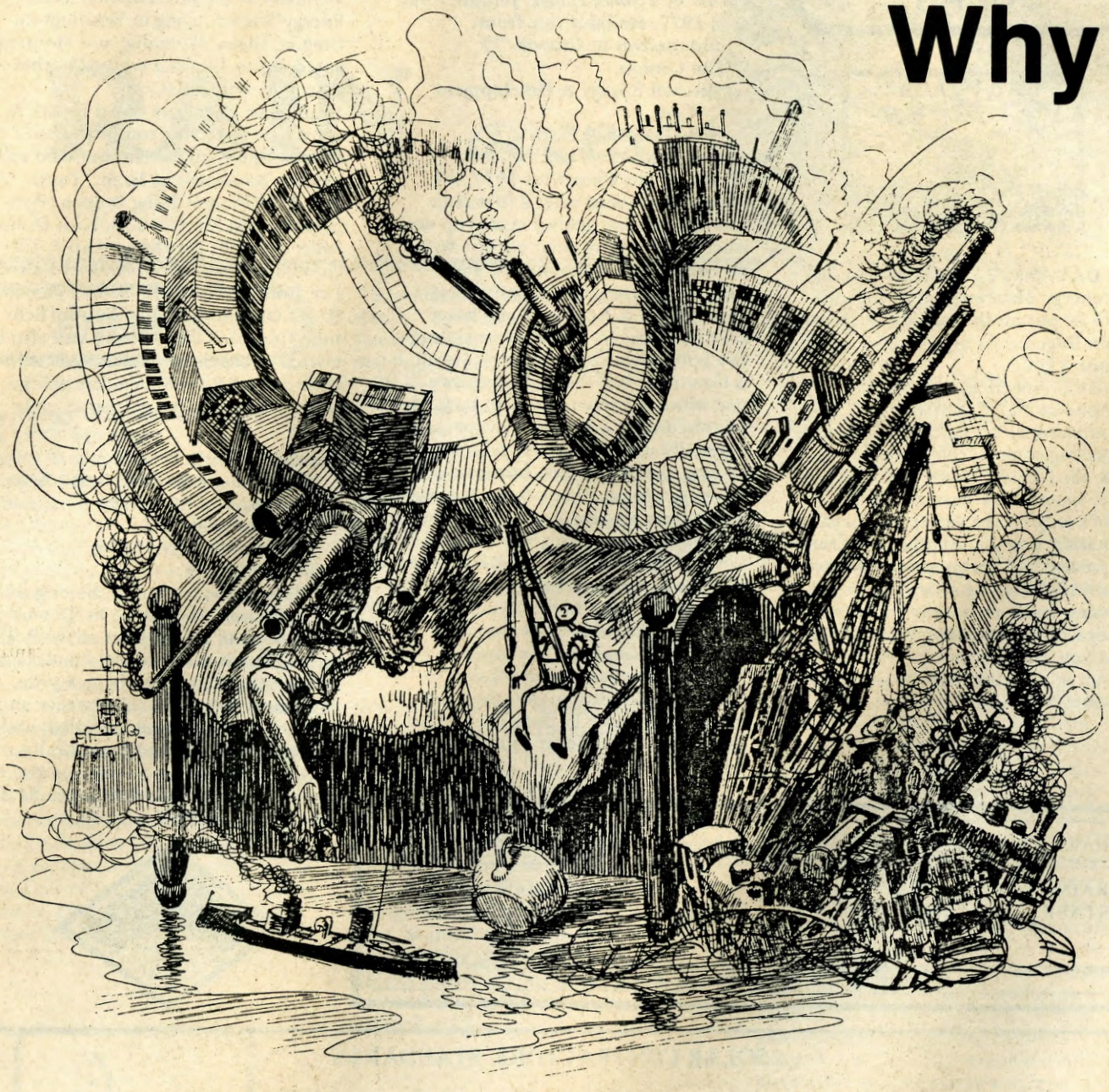
The Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) has published the third edition of their *Heating and Air Conditioning Systems Installation Standards for One and Two Family Dwellings and Multifamily Housing*. This edition includes solar systems installation standards and provides contractors with a wealth of technical and practical information regarding the proper design and construction of both air and liquid systems.

The manual is quite comprehensive, starting with the chapters on architectural considerations for energy conservation and the necessary load calculations and ending with equipment selection and installation. There are sections on proper liquids piping, controls, insulation, fuel storage and thermal energy storage.

The manual tends to be heavy reading but is well-organized and well-illustrated with schematics and diagrams which are adaptable to most installations. For the do-it-yourselfer, the SMACNA manual provides simple, feasible information upon which he can build his own installation. For the sheet metal contractors and air conditioning contractors who are just getting into the solar energy side of their business, this manual insures that commercial solar systems will be installed properly.

Copies of the manual are available from SMACNA, 8224 Old Courthouse Road, Tyson's Corner, Vienna, Virginia 22180. The retail price for the manual is $10 (plus postage) while licensed contractors, engineers and architects may get it for $6 through the local SMACNA offices. SMACNA does not print an excess number of these manuals for the general public, so if the Virginia supply is too limited (which it often is), try locating one through a local contractor, engineering firm or architect. —Martin Peterson

Why



Things seem to be moving along almost *too* well for a.t.—the ideas of community production, decentralization, local control of local situations, etc. seem to meet encouragement rather than resistance from government and business. The power companies are ominously quiet, sometimes even cooperative. Executives of large corporations came to listen to Schumacher in droves. *Small Is Beautiful* is a best seller. ERDA, AID and NSF have set up a.t. programs. The U.S. Congress is interested in a.t. Carter meets with Schumacher and Amory Lovins.

Yet these are not compatible bedfellows. What's happening? Why does Big Business love a.t.?

Ask them. Surprisingly, you're likely to find out, but also to have some fantasies about a.t. nicely shattered. Ann Becker and Carol Ulinski did a study a year or so ago on IRRI, the International Rice Research Institute in the Philippines (Development *Digest*, Jan. 1976). IRRI has developed a number of highly useful small-scale agricultural tools and machines adapted specifically to the Southeast Asian rice culture and has been working to encourage the production, marketing and use of such machines. They found out, in brief, that Marsteel, the dominant machinery manufacturer in the country, encouraged IRRI's efforts to get small businesses to adopt and produce their designs locally. Marsteel's logic was simple. Their marketing manager, Luis Bernas, freely admitted that they were quite willing to let someone else do the hard and risky work of developing designs and production, demonstrating, testing, overcoming local inertia, and developing markets for new products. They were confident that if demand for a product did develop they could step in and gain dominance in the market through their economic and advertising power and ability to overwhelm, fairly or unfairly, the small producers. Big business also welcomes the use of appropriate

Big Business Loves A.T.

technologies where they either give a boost to the economic well-being of an area or lower costs—in either case making more money available for the purchase of their products.

Sound at all familiar? Take another look at solar energy developments in the U.S. What's the pattern? You have a situation that clearly lends itself to decentralized, at-home application and local production and installation. You have individuals developing and refining the simple technology required and fighting the massive efforts of entrenched energy companies, financial institutions and government that have done their best to prevent the rapid conversion to solar energy. Now that the public has begun to demand application of solar energy, you find the government (ERDA in this case) giving massive amounts of *our* tax monies to pay large corporations to reinvent these already proven technologies. What is at stake is not *inventing* the technology but paying the corporations to develop *their* capabilities to produce it and also to receive credit from the government for inventing it. So the government promotes and pays big business to take over a new field that is developing quite well without its "assistance."

The next step is in process now. It is easier and more convenient for business to let government legislate the successful small producers out of business rather than have to compete directly against them. How to do it? Set up "performance" standards tailored to the capabilities of large corporations. The corporate approach to solar has consistently been biased towards exotic "high-efficiency" systems—ones that maximize the energy collected per square foot of collector but which produce less energy per dollar of expenditure. They know they can't compete on whole-system performance, so they try to push the issues to specific subsystems that can (but shouldn't) be maximized. The result is that an apparently innocent technical standard for thermodynamic efficiency clearly discriminates against simpler systems (homemade or local collectors, wood heat, passive solar construction) that are overall more effective and economical. Look at the federal and state standards being set up to determine what designs will qualify for tax credits, rebates or financing, and see what they really mean.

Curiously, no one has been speaking up against this. What has happened to the people developing solar energy over the last decade who lovingly espoused the vision of decentralized, do-it-yourself technology? Burned out? Bought out? Shoved aside?

Their silence has occurred in part because solar has been so new that its proponents have welcomed *any* means to get it developed, endorsed, accepted and applied, realizing on some level that solar must be accepted in concept before the question of How and Who can be dealt with. More importantly, development of solar energy has been tightly tied with undevelopment of nuclear energy, and to many people the corporate control of solar energy has seemed to be an acceptable price to pay—better they make solar collectors than reactors.

But the solar/nuclear tussle is being won by the inherently better wisdom, logic and economics of solar—not be corporate control of the industry. The question now is do we really need to or wish to pay that price or if we can still avoid doing so.

—more→

KEEPING SOLAR SIMPLE

What Can Be Done?

- Demand change of ERDA funding focus and end of industry subsidy.
- Demand reasonable performance standards for solar that fit local collectors.
- Demand encouragement of community production.
- Encourage backyard solar—change people's heads from buying to building:
  - —Make available workable whole system plans, manuals and options for solar hot water systems and hookup to existing water tanks.
  - —Work with hardware stores to make kits of parts available.
  - —Lay out community economic impacts of local and home production.
  - —Do publicized workshops for building solar hot water heaters on SUNday. Install units on newspaper plant, TV station, mayor's house. Do workshops in D.C. for all congressional representatives. Publish plans in newspapers.
  - —Provide write-ups on ERDA coverups and advantages to local and homemade units to local newspapers.
- Develop local financing for local/backyard systems.
  - —See Lee's article in this issue on pressuring local banks.
  - —Show banks precedent elsewhere for financing standard backyard units.
- Publicize information on passive design and relative costs of active and passive systems.
- Develop manual on insulating shutter construction.
- Put together the figures that show whether giving away materials for homemade solar waterheaters would be cheaper for utilities than new energy production.

In both the above examples there are several distinct issues to be dealt with. The use of solar energy or more effective agricultural tools is one issue. *How* those technologies are produced and used is a quite separate issue. (See David Morris's letter in this issue.) Despite its name, a.t. is not dominantly a technological thing. It is the doing of things at the proper scale in the proper ways to the ends that create a society and a world of which we are happy to be a part.

Once the feasibility of the necessary technology is shown, the real task of a.t. becomes a political one—dealing with the changing of the institutions that tie us to certain forms of doing things. That is the stage we need to move into now. It has hit home here in Oregon with compost toilets recently. Legislation permitting use of compost toilets was passed in the last legislative session and the Plumbing Advisory Board given the responsibility of drawing up regulations for their use. Everyone relaxed. Then draft regulations appeared, limiting use of compost toilets to areas where sewers or septic tanks were not available. This would effectively turn compost toilets into a tool for real estate development rather than an economical and ecological alternative to sewers. The technology is not enough without the appropriate institutional forms affecting its use.

The efforts of most a.t. people so far have been on proving its feasibility, but we will reach a dead end unless we turn from promoting harmless things like solar collectors and compost toilets to dealing with the real issues of institutional power and control that allow or prevent things from happening on more local and controllable levels. No community industries can succeed in a sustainable way, for example, until the role of advertising in centralizing economic activity and power has successfully been dealt with. The same is true of finance and unregulated federal taxation.

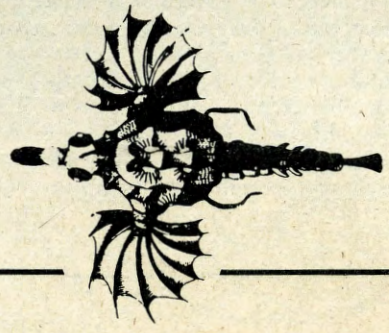
Our ability to deal successfully with many of these issues is greater than we may think. Our visions and our own capabilities have gained credibility time and time again in issue after issue—the nuclear/solar/conservation tug of war, in Vietnam, about pesticides—you name it.

In contrast, our country has built up a horrible record of lies, deceit and wrongdoing through the lack of vision and integrity of our decision-makers—both in public office and private actions. We damn other countries for violation of human rights but have violated human rights both here and abroad since our country's beginning, as badly as other countries do. Our government trains terrorists, troops and torturers for repressive dictators in other countries. The activities of the CIA and FBI in this country against Native Americans, Blacks, anti-war activists and others is finally coming to light and is scarcely less shocking. And both probably pall when the full nature of our "legal" economic exploitation of people is understood.

Our country desperately needs people involved in all levels of decision-making whose vision and integrity can be trusted. Who do you trust? The corporate leaders whose deliberate mistruths fill volumes from the advertising in every newspaper to the Congressional Record? The mercenary bureaucrats who drag down any designated path with a paycheck at the end regardless of where their hearts want to go? Or the silent academics who have failed to speak out on any of the real issues we face until their students have beaten the answers into their heads? Or is it the people who stand up bravely and stubbornly against the tide until the wisdom of their perceptions is finally understood. People echo whoever feeds them. Feed yourself.

It's time to work through the politics of changes—from inside and outside government; at home, in our neighborhoods and in Washington, D.C. And we need to remember that power *does* corrupt. It needs to be shared, localized and taken control of locally ourselves. Get to it.

Tom Bender



WHAT ABOUT ADVERTISING?

Advertising promotes consumption and causes centralization of production by those who can afford massive advertising campaigns. It is an added and unnecessary cost of production. All these effects are undesirable in the resource-limited conditions we are entering. Centralization of production brings centralization of economic and thus political power—a major threat to any democratic society. It also is ineffective in meeting local needs and using local resources effectively. The use of public media to promote increased desires when it is becoming more and more difficult to fulfill such desires seems against the best interests of society.

Where do we begin to limit advertising to informational purposes (such as classified ads)?

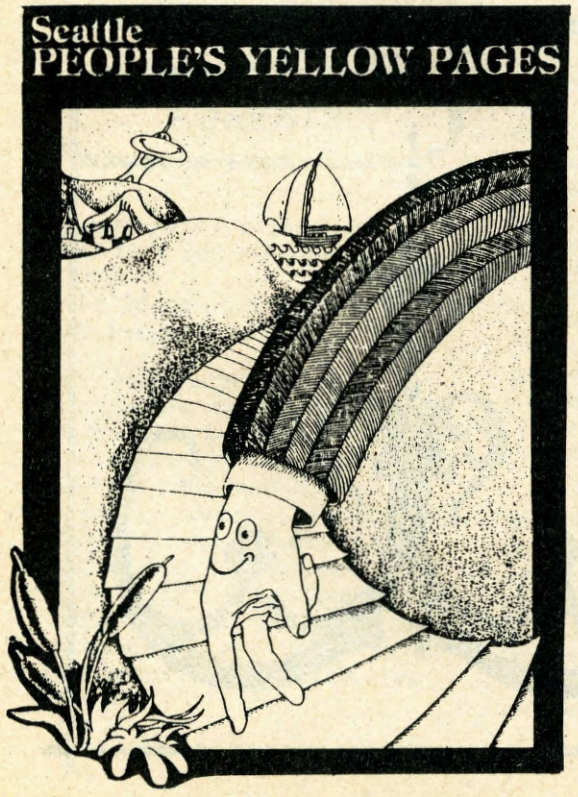
- **Work for removal of the massive postal subsidies for magazines, etc., that predominantly contain advertising.** *Consumer Reports, RAIN, Seven Days* and other publications show that advertising is not necessary for viable operation.
- **Ban outdoor advertising.** Several states have already, for various reasons.
- **Intervene in license renewal procedures for radio/TV stations** for a gradual phaseout of ads and substitution of public funding. Local governmental and citizen testimony can show the negative effect advertising has on local economies and the price of goods and services.
- **Remove advertising from public buses, airports, train stations, etc.** Any of these actions can start a snowball effect similar to what has happened with regulation of cigarette smoking in public places or the effect that the ban on advertising lighting had on energy conservation efforts in Oregon in 1973.

MEDIA

Women in Distribution
P.O. Box 8858
Washington, DC 20003
202/526-7400
If you are a library or a bookstore and want easy access to women's books by small presses, this is the place to go. (10 percent discount available to libraries). They have over 400 books and records listed. But it's also useful just as a very complete and well-annotated bibliography. Books are listed by publisher and cross-indexed by title and subject. Lovely 1940s photographs and clear layout make this catalog a joy to read. I think it's free. —LdeM

INFORMATION

***Seattle People's Yellow Pages*, 1978 edition, Kathy Reichgerdt, Editor, $3 from:**
Metrocenter YMCA
909 4th Ave.
Seattle, WA 98104
Here's another in the fine tradition of People's Yellow Pages, which Steve Johnson has been turning you on to for years in *RAIN*. This one's a dandy. Good graphics, clear layout, well-indexed. What more could a person want to learn about and enjoy Seattle? —LdeM



***A Directory of Rural Organizations*, free from:**
The National Rural Center
1200 18th St., N.W.
Washington, DC 20036
Covering resource organizations which may be of assistance to rural projects, the directory does have a rural focus but covers many national organizations of general interest as well. Having trouble contacting the heartland? Try this. —LJ

"Whole Montana Catalog," now in process, for info write:
Whole Montana Catalog
Montana Small Business Assoc.
Box 7356
Missoula, MT 59807
Going to printers in nine months, WMC will include happenings in renewable energy, cottage industries, grassroots organizing, alternative education, art, food, social services and media; a philosophy section will cover Montana lifestyles, economic development, authors/publishers and public events. Listings are needed for the "yellow pages," a directory of small businesses and services. —LJ

***Tucson People's Yellow Pages, 1977-78*, 2001 entries, index, $1.95 from:**
New Trails West
534 N. Hoff
Tucson, AZ 85705
An excellent model for how to do one as good. Every entry is numbered, there are phone numbers, zippy illustrations and nice quotes. Sure to give you a fast feel for alternatives in Tucson. —LJ

RECYCLING

***Recyclopedia*, Robin Simons, 1976, $3.95 from:**
Houghton Mifflin Company
Boston, MA
The Boston Children's Museum has long had a wonderful place where you can go rummage through piles of industrial waste for all sorts of wonderful objects to make games and toys and art out of. This is an idea book to be enjoyed by teachers and children alike. —LdeM

★

WATER/SEWAGE

***Goodbye to the Flush Toilet*, Carol H. Stoner, 1977, $6.95 from:**
Rodale Press
33 E. Minor
Emmaus, PA 18049
A thorough and detailed survey of the whole field of compost toilets—from how we got into the sewer game to how different alternative systems operate, a survey of homemade and commercial units with plans and guidelines for buying and use, greywater treatment and water conservation. Clear diagrams and lots of useful information—should be read by anyone considering a compost toilet. An excellent companion to the OAT report (*RAIN*, Dec. '77). —TB

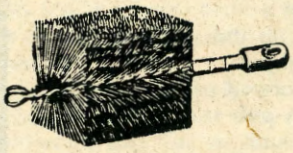
Care and maintenance

Ecologically-oriented people are using more wood fuel than ever before. I've noticed that many of us who burn wood have a tendency to neglect the periodic maintenance necessary for safety and efficiency. Of particular concern are older single course, unlined brick chimneys. Chimney fires are of little concern in newer, better constructed brick chimneys. This year, three old houses near mine have burned because their owners did not maintain the chimney.

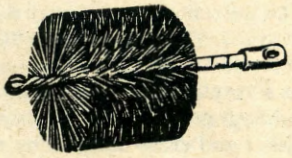
A yearly cleaning and inspection of the stove or furnace is a good point at which to begin. Potential problems can be discovered before they become critical. Stoves which have air leaks tend to develop "hot spots" and deteriorate much faster than they should. Welded stoves warp at an accelerated rate as the door or door frame begins to lose shape.

The first step is to wire brush and vacuum the stove interior. Listed below are some common chores and examinations to perform.

Trouble	Mode of Action to be Followed
1. Place trouble light inside stove in darkened room. Examine door and door frame for light leaks.	Replace door gasket if light is visible. Some older stoves did not use gaskets, and a good seal cannot be achieved. Maintenance of newer welded stoves must be done by the stove dealer or manufacturer usually under the implied or limited warranties. I consider stoves one to five years old with warped doors or door frames to be defective.
2. While trouble light is inside stove, check for light leaks around seams and joints.	Fill any gaps by applying furnace cement (usually a clay, asbestos and water mixture) from the inside. No special tools are needed. Wipe off any excess cement which appears on outside of stove.
3. If the appearance of the stove is rusty or pale grey-white.	Remove rust with a wire brush or emery cloth. Do not *sandblast*! Apply stove polish or high temperature silicone finish.



Square Chimney Brush



Round Chimney Brush

Older or unlined brick chimneys should be occasionally tested. One effective method is to build a small smudge in your stove or in the clean-out at the bottom of the chimney. Cover the chimney top with a wet blanket or piece of plywood. Look for smoke oozing from behind partitions or between bricks. If the chimney leaks smoke, it's probably time to call for professional help. Sometimes your local fire department can be of assistance.

Pre-fabricated metal chimneys must also be inspected and cleaned. These chimneys are easily brushed by the homeowner. If you're operating an air control efficient wood burner, I suggest that "air-siphon" chimneys (Ameri-vent, Majestic) not be used, and if they have been installed previously, replaced with a chimney incorporating solid insulation. The air-insulated chimneys tend to super-cool the stove exhaust, causing excessive creosote accumulation when used with efficient stoves.

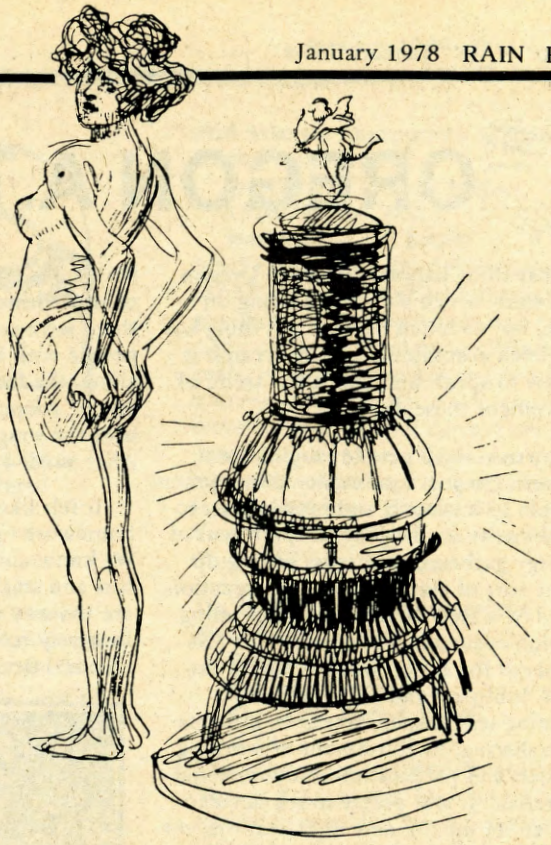
FIRCHER'S CORNER

Here are two publications from Rodale Press (Emmaus, PA 18049) that are about using firch for toolmaking and knifemaking. The first, *Edge of the Anvil: A Resource Book for the Blacksmith*, by Jack Andrews ($6.95), is a well-rounded primer with lots of drawings, an excellent bibliography, and a useful index. Perhaps most interesting, after reading about how to make different shapes by all sorts of methods, are the photos of the decorative smith-work produced by a master.

Step-by-Step Knifemaking, by David Boye ($7.95), starts from scratch and leads you from the first simple knife through an increasing profusion of more difficult knifework, using simple and then more complex tools and techniques for heat-treating, handle-making, blade-trueing. Sharpening & maintenance, steel-etching, sheathmaking and the science of alloy steels end the book. It's full of shop hints and reads clearly.

—LJ

# of woodstoves and chimneys



The scourge of newer, more efficient wood heating stoves is the pesky accumulation of creosote in the stove pipe or chimney flue. Balky, smoking stoves or chimney fires are the result of inattention to this common problem. This discussion of chimneys assumes the reader has the intelligence not to use single wall pipe as chimney material.

The stove or flue pipe which connects your stove to the chimney should be clean and free from debris. A hand-held wire brush will usually handle this job. During the heating season it is possible to check for creosote build-ups by tapping the side of the stove pipe. A light, thin metallic sound indicates the pipe is clean. A dull "thunk" indicates there is some creosote or debris in the pipe.

All chimneys should be examined and preferably swept once a year. There is no substitute for a close visual examination of the top of the chimney. Creosote accumulates first at the top of most chimneys and is easily visible. Loose bricks and soft mortar should be removed and replaced to maintain a safe chimney. Loose soot or objects can be dislodged by lowering a weighted burlap bag attached to a rope. Effective creosote removal usually must be done with a chimney brush (available at most wood stove dealers).

Additional help and information can be found with most stove dealers or local fire departments. Stove retailers who stock chimney cleaning equipment will usually have instructional material for the do-it-yourselfer.

Chimney brushes (shown above) are effective cleaning tools. The modest ($10 to $35) cost enables every homeowner to have his own set. They're available from S/A Imports Division, 700 East Water St., Suite 730, Syracuse, NY 13210.

Bill Day

FORESTS

***Reforestation in Arid Lands*, Fred Weber, 1977, $6.50 plus postage from:**
VITA
3706 Rhode Island Ave.
Mt. Rainier, MD 20822

A joint Peace Corps/Vita publication pulling together the Peace Corps practical experience and VITA's technical expertise. Based on West Africa projects, but most sections of the manual are valuable elsewhere. Covers land use choices, understanding soil and water characteristics, choosing species, nursery management, site preparation and planting, uses and prevention of fire, sand stabilization and a guide to useful native species for this particular region. —TB

***Leucaena*, National Academy of Sciences, 1977, free to institutionally affiliated recipients in government, education or research (if you're not, fake it—what absurd discrimination!) from:**
Commission on International Relations (JH215)
National Academy of Sciences
2101 Constitution Avenue
Washington, DC 20418
otherwise, $6 from:
National Technical Information Service
Springfield, VA 22161
(Accession No. PB 268-124)

New release in the NAS series that includes *Underexploited Tropical Plants* and *Making Aquatic Weeds Useful*. One of the few really commendable AID projects! I really like the reports we've seen from this series—solid, thorough, clear and mind-blowing in their implications. This one surveys a tropical tree family that is legumenous, whose leaves rival manure in nitrogen content and fertilizer value, whose wood has uncommonly high density and caloric value as a fuel, which coppices, and which provides excellent forage for ruminant animals. —TB

***Locating, Cutting and Gathering Wood* (G2873), *Wood as Fuel* (G2874), *Wood Burner & Chimneys* (G2875), and *Heating Water* (G2876), by University of Wisconsin—Extension, available to Wisconsin residents from county extension agent, out-of-state purchasers should check on availability and price from:**
Agricultural Bulletin Bldg.
1535 Observatory Drive
Madison, WI 53706

If you're in Wisconsin, you're very fortunate, as these are excellent primers on various aspects of wood heating. We'd like to hear about similar pamphlets from other states. —LJ

OREGON A.T. ON THE MOVE

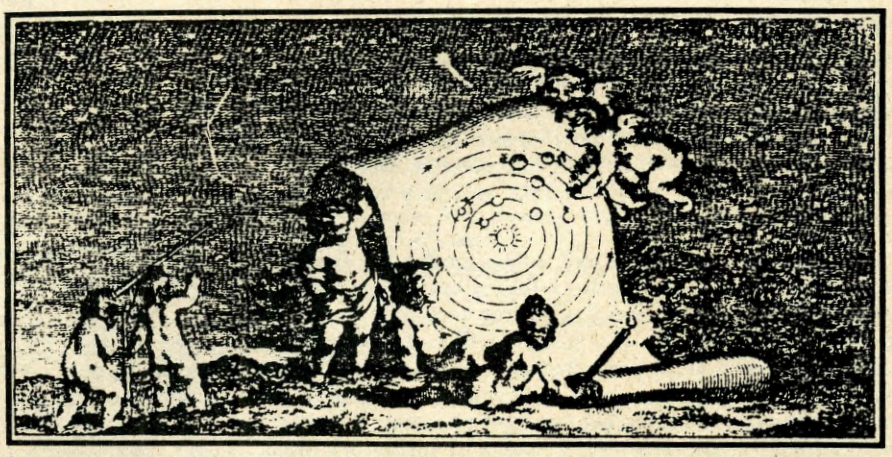
A neat thing happened here in Oregon last week which we are reporting on here, not so much because anything has yet been accomplished, but because it seems to speak well about the trend of movement these days.

Fifteen or so people ranging from Eastern Oregon community development people to inventors and networkers, to someone from the State Department of Energy gathered to discuss setting up some sort of statewide a.t. organization. All day, a free-wheeling brainstorming session ensued in which a laundry list of needs for action was put up on the wall: lobbying and advocacy work, training sessions, conferences, information sharing, establishment of working models and preparation of educational materials. It was pretty much decided not to set up any new organizations yet but to explore together the possibilities of beefing up existing groups with new people, money, moral support and ideas.

What was special about the meeting was its tone. There were amazingly no polemics—everyone seemed to be on the same wave length as far as purposes, scope and ideals for this animal we've been calling appropriate technology. No one had any axe to grind or battle to win within the group. Even though there were several combinations of people with histories of not getting along, the feeling of the whole day was one of cooperation—helping each other over the rough spots of articulating what needed to be said.

It felt like we'd all been doing our homework—getting our shit together. We know compost privies, solar collectors and small-scale recycling systems are the way to go, and we've come a long way towards making those mechanical devices a reality. We are now realizing that it is time to move into an action phase—getting legislators and bureaucrats to pass the enabling policies, learning to work well within groups, and getting the word out much more widely.

Everyone at the meeting knew that we weren't going to solve all our problems that day. We knew we were each too busy to even tackle much of the laundry list we have outlined right away. But we felt how good and strong and open we are. And we're meeting again in early January. —LdeM



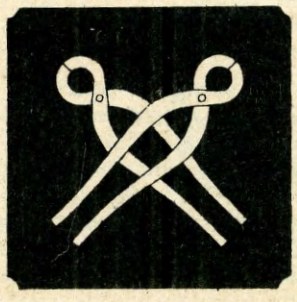
BUILDING

***The Care and Use of Japanese Woodworking Tools*, Kip Mesirow and Ron Herman, 1975, $7.50 from:**
Woodcraft Supply Corp.
313 Montvale Avenue
Woburn, MA 01801

We have our house pretty well finished now—with almost no use of power tools, as it has turned out. A lot of practice switching from Japanese to American tools and back, and learning the sometimes obvious. Japanese tools are designed for seasoned wood, not for sawing boards in the rain that squirt water like an orange. They're real good, though —for what they're designed for. *Care and Use* is a really helpful aid to doing right by them. What it won't teach you experience will. A half-size and half-price edition would be preferable, but this is the only thing around that covers the ground. —TB

***The Craftsman Builder*, Art Boericke and Barry Shapiro, 1977, $12.95 from:**
Simon and Schuster
1230 Avenue of the Americas
New York, NY 10020

This is the successor to Art and Barry's much-copied *Handmade Houses* and focuses, in the same format of lush color photos, on the homes and workplaces of artists and craftspeople rather than the wild and wooly "hippie homes" of Northern California in the first volume. My favorite is an incredible adobe and ceramic tile complex in California that goes on from where Gaudi and early Soleri ended! —TB



***Rooftop Wastelands*, 1976, $2 (Canadian) from:**
Minimum Cost Housing Group
School of Architecture
McGill University
3480 University St.
Montreal, PQ H3A 2A7

I don't usually do this, but the introduction to this book is so nice that I'm just going to let it speak for itself: "It is not about a great new city. It is about scratching at the grime, and letting the moss grow. The thing that will transform the city is not civilization, or architecture or public transport, but nature. All the straight lines could be covered up. All the concrete could crumble. All the roofs could be a garden." —LdeM

***Houseboat*, Ben Dennis and Betsy Case, 1977, $14.95 from:**
Smuggler's Cove Publishing
107 West John Street
Seattle, WA 98116

One of the best of the takeoffs on *Handmade Houses*—the exotic, expensive, poetic and homey visions of life on the water. —TB

APPROPRIATE TECHNOLOGY

Rat Warfare

Harried by hundreds of rats, the small city of Satellite Beach, Fla., acquired two red-tailed hawks and a barn owl a month ago and turned them loose. "From what I've read," City Manager Richard Shinn said of the birds, "they should be very effective. Rats and mice are their favorite dishes."

Mr. Shinn reports two confirmed kills since then—one in a drainage ditch and one in a backyard—and "almost daily reports from reliable citizens" among the 8,000 residents as to where the birds are operating.

"The owl covers the night shift, and the two hawks cover the day shift," the City Manager explains, adding: "I'm real pleased. I think it's working. But I think we need more birds."

The city will be getting "a dozen or so" more hawks and owls from the Florida Wildlife Service, he says.

—Richard Haitch, *New York Times* via Gigi Coe

***Light Energy*, monthly, free from:**
Cascadian Regional Library
454 Willamette St.
Box 1492
Eugene, OR 97401

Some NCAT money finally came through to help our friends in Eugene provide this a.t. supplement to their regional networking journal, *Cascade*. It's a good way to keep in touch with what's happening on many fronts here in the Pacific Northwest and a good way to get the word out about what *you're* doing. Keep in touch with them. Also write to them for information on their well-dome conferences, including the upcoming Spring Equinox Gathering. —LdeM

Mid-Atlantic Appropriate Technology Network (MATNET)
c/o Citizens' Energy Project
1518 "R" St., N.W.
Washington, DC 20009

Send a stamped, self-addressed envelope (SASE) for details which other a.t. groups now forming would find especially useful in developing organizational goals, programs, services and funding sources. A newsletter, conferences, directories and regional surveys are proposed. Contact them if you are in New York, Pennsylvania, Delaware, New Jersey, Maryland, District of Columbia, Virginia, West Virginia, Kentucky or Ohio. —LJ

Dr. E. F. Schumacher Memorial Foundation
Pentre Ifan
Felindre Farchog
Crymych, Dyfed, Wales
U.K.

The good people at *Resurgence* and Mrs. Varena Schumacher have set up a foundation to provide financial assistance, information and advice to groups and individuals carrying on Fritz's work in appropriate technology development. They need our contributions. —LdeM

GOOD THINGS

***Night Train at Wiscasset Station*, text by Lew Dietz, photographs by Kosti Ruohomaa, 1977, $7.95 from:**
Doubleday and Company, Inc.
Garden City, NY 10017

A beautiful combination of photographic impressions and prose that borders on poetry. The combined vision of these two men has created a portrait of Maine, a place in transition in the complexity of political and economic growth and change. It is a legacy created in love and admiration that explores the relationship of its history, its people and their relationship to the environment. It talks of and with a rural wisdom that knows the value of self-reliance. The tone of Dietz's writing is one of concern that Maine's past and future will be bought by those "outlanders" who are drawn by the romantic vision of its rural life. But he is hopeful. "Always there has resided at the heart of the native consciousness the wisdom to know that those who own the land own the people, and only a people who own and honor its land can control its destiny." A beautiful book that I know I will want to go back to. —JM

SMALL GROUPS, BIG WINDMILLS

One important characteristic of appropriate energy technologies is that they can be built cooperatively as a community effort, or by one or a number of local small businesses, providing local employment in all cases. Certainly the 2-megawatt Tvind wind-turbine, whose completion is reported on here by Prof. Marshal Merriam, U.S.-Berkeley, who has done much work in wind energy, must rank high as a model for the collective efforts of other small groups and their more expensive aerospace corporation competitors. Here in the U.S., two small private firms have also built wind gernerators faster and cheaper than the government or its contractors.

Just off the southern coast of Massachusetts, the island of Cuttyhunk now receives half of its electricity from a 200-kw, Americanized version of the Danish Gedser mill (Rain, *April '77, p. 12-14), which cost only $280,000. Its federally-funded equivalent, the 200kw NASA/DOE Mod OA wind-turbine, sitting on neighboring Block Island, R.I., was given to a private utility after costing us taxpayers $2,000,000, its rotor hub alone costing $200,000!*

The Cuttyhunk wind-machine was manufactured by WTG Energy Systems, Inc. (Box 87, 1 La Salle St., Angola, NY 14006, phone 716/549-5544), a ten-person company, and provides 50 islanders with over 400,000 kwh/year at 5.3¢/kwh. Additional information can be found in the December 1976 Windpower Digest *($2/single copy, $6/yr., quarterly, from* WPD, *54468 CR 31, Briston, IN 46507) and the September 2, 1977,* Science.

In the Pacific Northwest, an even smaller but no less technically proficient and innovative family firm has built a 140 kw, 72' diameter, 3-bladed, upwind-rotor, hydraulic wind generator on an 80' tower as a production prototype for follow-on 275, 600 and 2700 kw capacity sizes. Charles Schachle, an aeronautical engineer, with his two sons, an electrical engineer and a business/marketing manager, have developed an extraordinarily sensible system which includes: 1) inexpensive wood blades from glue-laminated beams, 2) an original airfoil similar to but more highly cambered on its lower surface than the famous Wortmann FX-series airfoils, 3) an extremely stiff tower buildable by local steel fabricators and designed to tilt up for speedy on-the-ground installation of blades, hub and power head, without large and expensive crane work, and 4) turning the entire tower hydraulically on a concrete pad rather than rotating the tower-top powerhead alone on a stationary structure (i.e. similar to 1931 Russian Yalta wind-turbine; see Power from the Wind *by P. C. Putnam).*

The Schachle & Sons mill has been operating since May 1977 at the Moses Lake, Washington, airport, supplying power into lines of the Grant County P.U.D., and is ready for immediate mass production. First shipments on a 600 kw size can be in 90 days from receipt of purchase order at $400-$480 per kilowatt (uninstalled). Contact Charles Schachle, 1032 Grant St., Moses Lake, WA, phone 509/765-9696.

And remember as you read about the Tvind mill costs that Boeing has a $10,000,000 contract from the federal Dept. of Energy to design and build one 2.5mw wind-turbine for Boone, North Carolina, by 1980. Isn't it about time you asked your Congressman to get DOE to move cheaper and faster, perhaps by simply buying and installing these succulent fruits of Yankee ingenuity, small business and private enterprise? You could start by sending a copy of this article.

Additional citizens' energy perspectives on American wind energy can be found in People and Energy *($10/yr. from* P&E, *1757 'S' St., N.W., Washington, DC 20009), which started the first of a series of articles on aeolian power in Vol. 3, No. 5. —LJ*

The Tvindmill

Marshal F. Merriam[2], College of Engineering
University of California, Berkeley, CA 94720, USA

A most remarkable endeavor in the effort to use renewable energies passed a critical milestone recently in Denmark. At the Tvind Schools[1], assembly of the world's largest windmill has been completed. The last of three giant blades was bolted into place on 17 November 1977. After trials the machine is scheduled to go into regular service early in 1978.

The Tvind endeavor is remarkable in several aspects. First, consider the technological features of the machine. It is by far the largest windmill standing in the world today, and by a small margin the largest ever built. A horizontal axis, 3-blade, downwind propeller, the blades sweep a circle of diameter 54 meters. The hub is 50 m. above the ground. For comparison, the rotor diameter and hub height of the two-blade Smith-Putnam wind turbine, Grandpa's Knob, Vermont. U.S.A. (1941-45) were 53 and 37 meters, respectively. The NASA-ERDA windmill which has operated at Plum Brook (near Sandusky), Ohio, U.S.A., since late 1975 has rotor diameter and hub height both 38 m. The tip of a vertically upright blade of the Tvind machine stands higher than the roof of a 20-story office building.

In addition to sheer size, and all the engineering that implies, the machine includes a number of technological features which are imaginative, novel and interesting. The blades, for example, are constructed of fiberglass and plastic foam and weigh only five tons each. (The Smith-Putnam blades, which were metal, weighed about 8 tons each). Along with lower mass, the use of fiberglass composite should have advantages from a fatigue point of view. The Tvind blades were laid up and constructed mostly by hand techniques. A large number of volunteer workers accomplished the task without heavy machinery or modern automation. Fiberglass blades have been used before (though rarely), but not with the same construction technique or on the same scale.

The emergency speed control system, a matter of great importance on a big machine, has novel aspects. In addition to more or less conventional shaft brakes and pitch controls, there are parachutes! Parachutes of the type used to slow high-speed airplanes when landing are stowed in the wing tips of the windmill, and deploy under emergency overspeed conditions when centrifugal forces overcome magnetic latches. The drag from even one of the three parachutes is calculated to be sufficient to slow the rotor to a safe speed.

The operational speed control system is also unusual. The Tvind windmill is the first large aerogenerator to be designed to operate at variable rpm. It is intended that it will operate at that rpm which maximizes efficiency, which means faster rotation at higher wind speeds, up to a maximum of 42 rpm at the rated wind speed (15 m/s). Up to rated wind speed the rpm is controlled by controlling the load on the generator; above rated wind speed hydraulic blade pitch control is used to keep rpm constant.

Marshal Merriam

Student-built Tvind mill: 2 MW rated output at 33 mph (15 m/s) windspeed, 177 ft. blade diameter, 174 ft. tower, 3-blade downwind rotor, cost: $660,000; construction time: 2½ years.

Schachle & Sons production prototype WECS: 140 kw rated output at 26 mph windspeed, 72 ft. blade diameter, 80 ft. tower, 3-blade upwind rotor, located at airport, Moses Lake, Washington (note circular concrete pad on which entire tower turns to orient wind-turbine into wind).

The electrical system reflects the intended use of the machine—partly for heating and partly for electric power. (Previous large machines have been built for electric power production only.) The generator (2000 kw, 3000 volts) delivers variable frequency a.c. power, which goes down a cable to the ground and under the ground for some distance to a nearby control house. There it is transformed to 440 volts, rectified to d.c., and inverted to 50 hertz a.c., synchronously phased with the local power grid. Resistive load, thermal storage (resistively heated), electrical disconnects, and other control circuitry are connected between the windmill and the transformer. Because the generator was not custom designed for the windmill, it is somewhat fully sized. Also, about 80 percent of energy use at the Tvind Schools is as heat, only 20 percent as electricity. Thus the rectifier-inverter system is smaller, electrically, than the generator, and is rated at 500 kw, not 2000. It is expected that this will be ample to handle the electrical load of the school. At times there will be a surplus which may be sold to the local power company. Wind generator output in excess of 500 kw will be used as heat. The economic value of electricity sold into the net grid at wholesale rates is about 10 Danish øre/kwh (1.6¢kwh at 1977 exchange rate); the economic value of the same electricity converted to heat and used to save fuel oil is about the same.

Fully as remarkable as the technological features of the Tvind windmill are the place where it was built and the way in which it was built. The Tvind Schools are part of the Danish education system; they receive money from the state, but they are not public schools in the usual sense. They are better described as private schools receiving public funds to pay the costs of educating the students. They have complete autonomy and the education program is quite out of the ordinary. The curriculum includes problems in the third world, problems in Denmark, and many other things not commonly covered in depth in the public schools, as well as the usual public school subjects. The students do practical work as well as classroom exercises. There are 3 schools, a teacher training college, a 'højskole' and an 'efterskole.' The højskole students are age 18 and up; the efterskole students are 14 to 18 years. Many of the højskole students have been working for some time before returning to school.

Students and staff live at the Tvind community, or in one of the outpost communities, in a cooperative and communal manner. Staff salaries are pooled, and a major fraction of the money is used for projects of the school, of which the windmill is one. Staff and students work together on these projects with a high degree of motivation and commitment. The cooperative projects, the egalitarian social structure, and the warm informal atmosphere contrast noticeably with the competitive and hierarchical conditions of most universities, companies and government laboratories.

Construction work on the windmill project began in May 1975 and has progressed steadily since, with some changes in plan as the project evolved. The motivation for the project was not to build the world's largest windmill. Rather, it was an effort to gain energy self-sufficiency for the school by using a renewable energy source. The best renewable energy source at Tvind is wind. (There are some solar collectors on Tvind buildings, but solar energy in the winter is a difficult proposition in Denmark.) The motivation came first, the technology was acquired—and not without effort—as the project proceeded. The great windmill stands today as an impressive professional accomplishment—conceived, organized, and mainly built, by amateurs.

Another matter worth noting is the cost and the funding of the machine. To the point of completed assembly and installation, but before first rotation, about 4 million Danish kroner had been spent ($660,000 U.S.). None of this money came from the government, and none from any large private corporation or foundation. Essentially, all the funds were contributed by staff members at the school from salary income. A tremendous amount of unpaid labor was donated to the project by members of the "windmill team," volunteer workers from all over Denmark. A number of skilled full-time workers spent extended periods at Tvind; they received living expenses but no salaries. Some outside labor for specialized jobs was hired at regular rates. The cost of the outside labor and the living expenses of the full-time workers is included in the 4 million kroner. Although it cost more than had been originally estimated, much less money was spent than on machines of comparable size built elsewhere.

November 17, 1977: bolting on the last 88½ ft. blade, 2½ years after May 29, 1975, ground-breaking (note size of workers atop rotor hub and in open nacelle).

When the machine is in regular operation it is expected to supply all the energy needs of the school, both electricity and heat, and to generate some surplus electricity for sale to the local power company.

The workers at Tvind have built a machine which is a first rank achievement in technology, which demonstrates the power of community organization, and which shows the way in renewable energy implementation.

1. The Tvind Schools are a freestanding community of about 1000 people located 4 km south of the town of Ulfborg (which is itself 90 km north of the city of Esbjerg) in West Jutland. Tvind is about 10 km from the North Sea coast in the direction of the prevailing westerly wind. Address: Energikontor, Tvindskolerne, Tvind, 6990 Ulfborg, Denmark.

2. This report was written while the author was a visitor at the Neils Bohr Institute, Copenhagen.

WIND'S UP—LET'S GO!

To say that there was electricity in the air at America's 3rd Wind Energy Conversion Systems (WECS) Conference held recently in D.C. is neither a stale joke nor an understatement. The three days of tightly-scheduled slide presentations and workshop sessions, sponsored by the former Energy Research & Development Administration,(now the Dept. of Energy) Sept. 19-21, 1977, was the best-attended, most informative and most harmonious to date. From impromptu soccer games behind the Shoreham-Americana Hotel to brainstorming together over beer at nearby bistros, the 500-plus participants often seemed to be sharing in such a new-found camaraderie at a delightfully festive occasion as to mark an important coming of age for windpower around the world. Indeed, the undercurrent of thought was "Hey, we're really onto something good! . . . When will the public wake up to it all?"

For, in probably the most cost-effective research, development and, yes, manufacturing programs for electric power production since Edison's early research center in Menlo Park or Charlie Steinmetz's lab at General Electric, large and small companies and high schools the world around have quickly produced, with updated technology, working wind-electric systems along an entire size spectrum for uses ranging from the (megawatt) utility grid to the large corporation, the small business and the individual home. (ERDA/DOE's wind energy program has not yet spent $100 million, even if one includes funds disbursed by the National Science Foundation before ERDA existed or $35 million in funding was authorized by Congress for 1978. The exactly $55.3 million spent amounts to less than 3% of the $1.935 billion spent in 1977 alone nation's nuclear fission-electric program, which produces power that is not only *not* "too cheap to meter," as promised us during the "Atoms for Peace" in the late 1950s, but rather produces a Gorgon's knot of expensive, not-so-peaceful problems for both us and the next generation of Americans: radioactive waste storage; the dismantling and entombment of reactors even now wearing out faster than anticipated from "crud" in pipes and metal embrittlement; global nuclear proliferation to more, smaller and often unstable countries; and atomic terrorist blackmail. And this $55.3 million is also less than 13% of the $420.9 million spent in 1977, of no use to America until 2025 according to scientists working on it, on the nation's nuclear fusion development program. Indeed, it seems we're now seeing the same excessive expenditures for fusion that we saw for fission and getting the same "pie-in-the-sky" propaganda that went down like honey under Pres. Eisenhower. Yet, unlike then, windpower is on line and ready to go, and go quickly. Because of this new situation, many energy observers, worried that we have had too many eggs in the atom basket for too many years, are suggesting that budgets for the breeder and for fusion be given over to wind energy. Electric power can then start coming back to us immediately, or at least in the 1-1/2 years or less it takes to build a large WECS, rather than waiting for who knows what that may be too late in 2025.

In fact, this same general view is set forth in a major—and controversial—new draft study for the Dept. of Energy, which asserts that wind power carries the greatest potential long-term benefits among solar energy systems, and that the government may be over-emphasizing more costly demonstration projects for other solar technologies. The analysis, prepared by SRI International (Menlo Park, CA 94025) for DOE's Solar Working Group, appears to run contrary to public and Congressional opinion, which has placed more emphasis on "direct" solar energy applications as an important replacement for fossil fuels in the next century. But rather than this continuous debate and whip-sawing of emphasis, staffing and funding between solar, wind and bioconversion, let's increase them all to realistic levels with dollars from that messy dinosaur, nuclear power.

Among the most important and interesting tidbits at the conference, especially for grid-connected WECS, was a single paragraph and a simple algebraic equation from a paper titled "Directional Guidance for Tariffing Power and Energy to and from Small Power Generating Equipment Rated Below 500 kw" by Denmark's electric utility association, The Danish Association of Electricity Supply Undertakings (Vodroffsvej 59, 1900 Kobenhavn V, DENMARK). This is the section under "energy accounting":

> *The energy supplied by the utility is accounted for according to the tariff being used if the customer had no generating equipment himself. Energy supplied to the power grid from the customer is accounted to a price corresponding to the savings of the power company due to the decrement in production. The savings are calculated once a year as an average fuel-price for the year considered (b Dkr/Gcal) multiplied by an average fuel consumption per kwh (2500 kcal/kwh) and finally corrected for electrical losses saved (14 percent). Thus the price becomes:*
>
> $2500 \times 1.14 \times 10^{-4} \times b = 0.285 \times b$ *ore/kwh =* $0.00285 \times b$ *Dkr/kwh*

This means a Gemini Synchronous Inverter owner putting wind, solar or wave electricity into the grid gets paid what the utility pays to generate electricity (i.e. the wholesale price) plus an extra 14 percent due him because he is saving the utility that amount of electricity which would otherwise be lost during transmission and distribution if the utility had to send its own electricity to other customers at or near that point-of-use. All in all, a much better deal than Con Ed's treatment of the 52nd Ave. tenement in NYC (an $18.00/mo. connection fee for supplemental service, even if no electricity is needed) and a useful fair precedent we should work hard to get adopted into law by state public utility commissions.

During the conference the American Wind Energy Assoc. board of directors met and a number of new directions and activities were announced: 1) AWEA will expand its concerns to include those of medium and large WECS designers, researchers and manufacturers, and to that end will invite a large WECS manufacturer on the board; 2) the 7th annual AWEA Conference will be in March 1978 at Amarillo, Texas, with trips to visit the 200 kw Mod OA at Clayton, N.M.; 3) the *Wind Technology Journal*, edited by Herman Drees, would be a quarterly publication available for $15/year to AWEA members ($20/year to non-members), $40/year to institutions, from *WTJ*, Box 7, Marston Mills, MA 02648. Samples of the first issue, an excellent start, were well-received by conference participants.

Watch for future announcements that the proceedings are available by summer 1978.

—Lee Johnson

We've had a great deal of very positive feedback on the November issue. We're printing the following more critical comments here because there is more to be learned from them.

FEEDBACK FEEDBACK

Dear Rainpeople:

Your November 1977 issue, which focused on the California Office of Appropriate Technology and its activities inadvertently revealed, I think, one of the real dangers of growing government involvement in the a.t. social change movement. For despite all of the well-reasoned and self-conscious contributions by people involved in OAT, no mention was made, or perhaps could be made, of Governor Jerry Brown's indefensible position on what may well be the single most significant movement in the state and the country: National Land for People's efforts to have enforced the 160-acre limit law in California's Westlands Water District. Brown's decision to oppose, rather than to support, regulations tightening enforcement of a law regulating federal irrigation water is a decision that is squarely on the side of this state's agribusiness, and is clearly at odds with his image among some of us in the a.t. community.

So when *RAIN* runs a piece on OAT, and the director of that agency acknowledges that there is a perception that "OAT is essentially . . . a 'toy' of the Brown administration," the reasons for this are really not hard to find. While Governor Brown is quite willing to support a tiny but very well publicized a.t. program of bikes and compost privies, when it comes right down to the very real politics of California a.t. and ecology (and don't, please, credit him with the Dow pull-out . . .) he is on the side of big business and big agriculture, the well-cultivated image notwithstanding. Brown's position really should not surprise us, but what is disturbing is the entirely uncritical presentation of one of his pet programs by *RAIN*. Perhaps that is due in part to the fact that *RAIN* did play a part in the formation of that program. But the OAT program and Brown's pro-agribusiness stand are opposite sides of the same coin. And that is the crux of the matter. Is the a.t. movement, for nickels and dimes, going to allow itself to become an agency for political hucksters who, when it really comes to the crunch, are on the other side? We pride ourselves on our ability to see through the political and economic propaganda of Mobil and Tenneco, yet are all but oblivious to the manipulation of the a.t. movement by ambitious politicians and their functionaries. As an a.t. community organizer who works in a government-sponsored a.t. program (and can't be accused of being an a.t. purist), I have grown tired of hearing charges that the a.t. movement is naive and even opportunistic. It isn't. But *RAIN*'s "closer look" at the California scene lends credence to those kinds of assertions.

There seems to be a growing feeling among some a.t. activists that the a.t. movement can "use" government agencies and the political process to achieve its goals. I submit that sophisticated politicians and various governmental agencies will increasingly use the a.t. movement to promote and legitimate their own programs and careers, and to obtain cover for their more insidious activities. The Brown/OAT alliance is a case in point. Until a.t. activists become fully aware that they can and will be used by the very forces they oppose, they are destined to be ineffective and even counter-productive. Politics is far too important to be left to the politicians. So is appropriate technology.

Very truly yours,
J. David Colfax
The Mountain School
Box 88, Redwood Ridge Road
Boonville, CA 95415

Dear David,

Thank you very much for your thoughtful letter criticizing the November issue on the California Office of Appropriate Technology. Your comments on Jerry Brown and the activities of his administration are quite true—he is essentially running for president and is doing whatever he perceives is best to achieve that goal. And yes, we would argue that we all are simply using him and his good graces (as we are using others) to achieve some successes for more appropriate technologies. Indeed, we would be the first to argue that government involvement—except perhaps on the local level—may well be hurting more than helping us. In fact, a major reason for our beginning to feel this way has been our abysmal experience with NCAT, which we will expand upon in an issue one of these days.

The RAIN *OAT issue was an experiment. It was edited by the OAT people themselves. We only added a few introductions where they were missing and cut a few pieces for space reasons. We probably shouldn't even have done that so that it would be more clear that it was guest edited. We want to begin to highlight different regions, and we want to spread the joys and burdens of doing an issue around. Gigi Coe at OAT is an old friend whose idea of doing an issue we were excited about.*

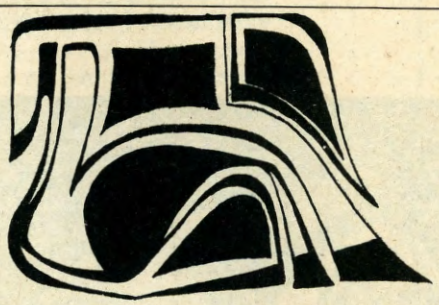
We have mixed feelings about the end result. We were hoping that it would contain a more self-critical look at the pros and cons of working in the state government—views that the people involved with OAT have expressed to us privately. That they could not express them publicly shows in itself a problem inherent in the politics of the situation. We had also envisioned more coverage of grass roots activities in the state than they were able to pull together. But, as it stands, the November issue is a very useful tool for others who are trying to get such things going in their own areas.

Our main philosophy on achieving change in general and in furthering "a.t." is to "do as way opens." There isn't any right *path and luckily no party line to follow. We must all work on projects we feel we are best at and work in ways that are appropriate to each of our particular skills and situations. It remains therefore important for all of us to respond with good-humored,* empathetic *criticism (or reminders) when we seem to be going overboard or being too conservative or defeatist in our views and actions.* RAIN *will continue to try to cover all manner of achieving the ends we feel are important.*

So thank you for your feedback. It struck a good chord in all of us. —LdeM

Besides the above comments on the November issue, we have an important one to make—and an apology to offer to an old friend. Because of his long illness this fall, Wilson Clark did not have a chance to write the piece he planned on doing. Gigi, the editor of the issue, had wanted therefore to include a piece he had done for the Ecologist *on energy, but it wasn't very California a.t. related and got axed when we were getting short of space in layout.*

In the process Wilson was barely even mentioned in the issue. He is an integral part of a.t. in California, as one of the three members on the OAT Steering Committee and as assistant to Governor Brown on energy-related issues. We were down there the other day watching him in action—I think his sense of the values and problems of working in government are as well-grounded as anyone I've yet talked with. Hopefully we'll get him to write on these perspectives for you soon. —LdeM



Dear Rain,

I have just finished reading your November '77 issue and enjoyed Sim Van der Ryn's article "Get the Right Rock." The thing I am not sure about is whether the first steps he talks of are really far along enough to be considered steps rather than just pointers for action. My consideration of this as such is due to the experience of Community Technology in Washington, D.C., of not being able to get the low income minority groups that most need alternative technology out of the high technology ideas that have been implanted in them through media, education and social surroundings. The most neighborhood participation we got was among the young, who saw us as an ideal target for ripping off tools and produce.

It seems to me as though too much of the focus on appropriate technology comes directly from the people who do not have to worry where their next meal is coming from, from those in the middle and upper classes. The effort of Community Technology seems to have had most effect in spurring other groups that profess the same ideals but do not yet have significant effect on public attention. Getting more accomplished than just setting up community gardens is where focus needs to be applied, such as setting up groups that specialize in low cost, low energy architecture that would readily be apparent to the poor as deserving of the lump sum that initially needs to be invested.

Getting like-minded people together seems fine to me, but it does not go far enough. Until adequate people who are now opposed to alternate methods are "converted," it will serve only as a primarily academic forum of ideas rather than results. I am not trying here to knock alternative technology, but rather the way it seems to be progressing among too high social strata.

Sincerely,
Ben Swet
Suntek Research Associates
Corte Madera, CA 94925

For anyone interested, there is a very intriguing article by Karl Hess on his feelings about the Community Technology experience. It is entitled "Flight From Freedom: Memories of a Noble Experiment," and can be found in the September/ October issue of Quest '77, *$2 from Ambassador International Cultural Foundation, 300 West Green Street, Pasadena, CA 91129. —LdeM*

Dear Rain,

I liked the November issue. (I got it two days ago, I think.) OAT is clearly doing the best work int he country. However, I had some minor problems. Somehow, the issue did not convey to me the massive potential in California. The Public Utilities Commission's analysis of solar energy and utilities, the Santa Clara leasing experiment, the Palo Alto neighborhood utility concept, the Davis, California, reduction in electricity and model ordinances were not mentioned. I guess my problem is that the issue was totally environmental, and didn't really speak to political or economic issues. It didn't mention SolarCal, for example, which may or may not be an important consideration in California, but certainly Hayden has a constituency. I think the 55 percent tax credit might have gotten somewhat more play in it. After all, California's goal for 1985 of solar homes is apparently equal to Carter's goal for the entire country!

This leads to another comment. I happen to adore Jane Fonda, Mary Tyler Moore and Paul Newman. I think the idea of a public television show and stars for the sun is very important. However (isn't there always a however?), as I said to the Sun Day initiators, there are really three issues involved in solar energy. One is the need to switch to a renewable energy resource, the so-called environmental/survival issue. This is the one which has broad public support. It brings people by the millions out into the streets. People want solar, and the country is moving, ever so slowly, toward solar energy. But, the need for a Sun Day that emphasizes only this component has passed. California's 55 percent tax credit means that 10 percent of the population is now rapidly heading

—more feedback→

toward a solar-based economy. And, since it is California, and Brown is running for the presidency, anything that happens there will have a major impact on federal and other states' policies.

The second issue involved with solar is decentralization. This has two parts. First, who will own solar energy? Second, who will own the non-renewable resources? Do we want GE to produce the collectors? Do we want Con Ed to lease them to us? These are not simple questions. Do we want horizontal divestiture by the oil and coal companies of solar corporations? Suddenly, we find that our constituency for solar energy begins to drop off. Although Americans very much want their own utility companies, it is not clear that they are willing to confront oil and gas companies. Jane Fonda, maybe. But Mary Tyler Moore and Paul Newman? Indeed, some of these issues are not clear cut. It is very different to have an oil company making us pay every month. It produces an enormous cash flow. If GE sells us collectors that last 40 years, they become appliance manufacturers, and we have less reason to oppose them. Also, if solar is undergoing a rapid evolution, leasing may prevent obsolescence from undermining people's buying power. The question of horizontal divestiture is extremely important since there is a scarcity of capital for new businesses. If we reduce our reliance on fossil fuels, do we then begin to think about public ownership of the non-renewable resource companies?

The third issue involved with solar is that of class. How do we get solar to low-income people? This could become a major problem, for the rich can now purchase passive designed homes with wind generators and opt out of the energy crisis. The poor can never opt out. What do we do for renters? How do we design financing mechanisms for low-income people? This issue of class may find a very small constituency behind it. Americans do not like poor people to begin with. A.T. people stress that poor people can build their own collectors using recycled materials. That may be so, but that isn't going to dent the problem unless there are public resources put behind this.

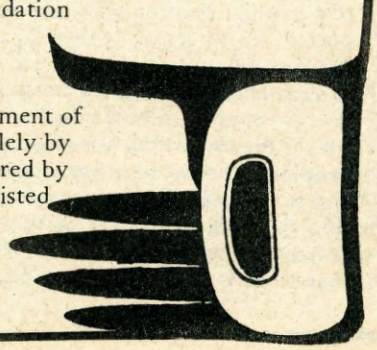
I think that any demonstration of support for solar energy is an important step in the right direction. I am afraid, however, that its power will be diluted by not defining the issues distinctly, and not laying out an agenda. It should not be an introduction to solar and an endorsement by stars. It should be the beginning of a struggle for redefining the goals of the country. Unfortunately, the more defining we do, the less general support we will have. It's a problem, I know.

Best wishes,
David Morris
Institute for Local Self-Reliance
1717 18th St. N.W.
Washington, DC 20009

Corrections on California Issue, Nov. '77

Pacific Horticulture is $6/year from:
Pacific Horticulture Foundation
P.O. Box 22609
San Francisco, CA 94122

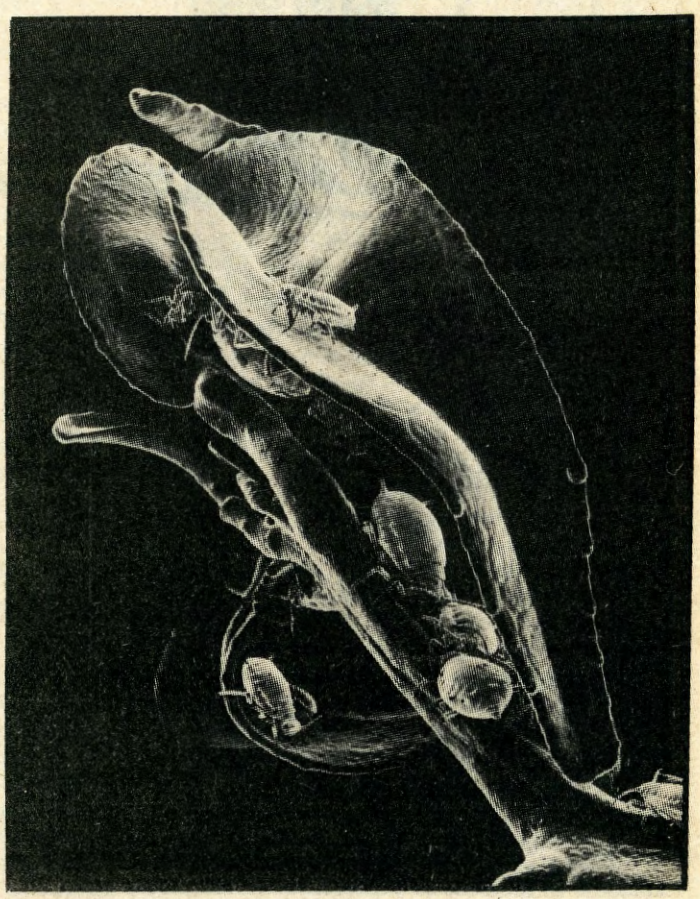
The article "Biological Treatment of Waste Water" was written solely by Wade Rose and not co-authored by Joyce Hochmuth-Nowell as listed.



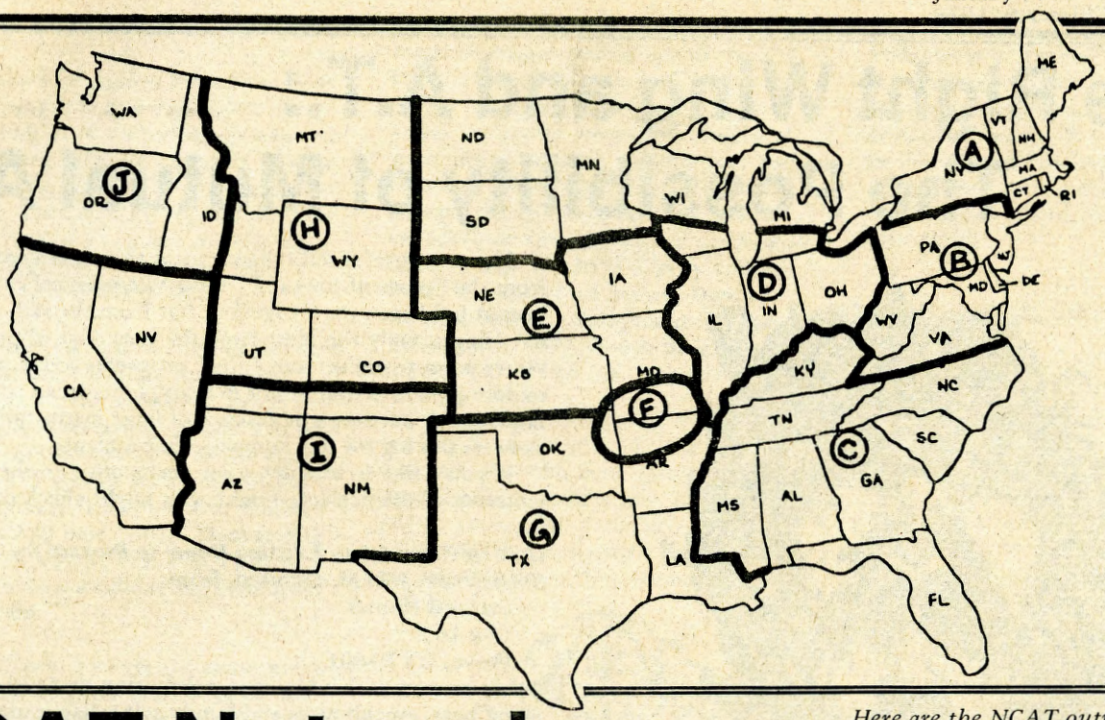
GOOD THINGS

***Magnifications*, David Scharf, 1977, $24.95 from:**
Schocken Books
200 Madison Avenue
New York, NY 10016

This is the kind of book, like *Behold Man*, that is usually too expensive to buy for yourself, but great to find in a library or doctor's office or any "waiting room" where you're bored and open to have your sense of you in the universe tweaked a bit. Of the photography books dealing with the microworld, this is the first we've seen with a gently cosmic perspective (Two Aphids Grazing on a Lemon Leaf, A Mite on the Neck of a Termite) and a sense for the strange and stunning beauty of the world of the little things. It's hard to feel separate from these things once you've experienced their world and begun to sense what beauty and attraction a flea or bee feels for other members of its species. —TB



"Aphids Grazing on a Lemon Tree Leaf"



NCAT Networks

The National Center for Appropriate Technology is in the process of funding a series of regional newsletters—in most cases paying for an insert in an existing publication. These are the ones already approved. We'll let you know when we learn of additional ones.

New Roots
University of Massachusetts
Energy Office
Amherst, MA 01002 (A)
Contact: Fran Koster (413) 545-0666

Center for Science in the Public Interest
1757 S. St. NW
Washington, DC 20009 (B)
Contact: Ken Bossong (202) 332-4250

Georgia Conservancy/Southern Rural Action
Suite 407, 3110 Maple Drive
Atlanta, GA 30305 (C)
Contact: Cecil Phillips (404) 262-1967

Midwest Energy Alternative Network
Governor's State University
Park Forest South, IL 60466 (D)
Contact: Bethe Hagens (312) 453-5000

Iowa Community Action Research Group
P.O. Box 1232
Ames, IA 50010 (E)
Contact: Skip Laitner (515) 292-4758

Ozark Institute
Box 549
Eureka Springs, AR 72632 (F)
Contact: Edd Jeffords (501) 253-9601

Center for Maximum Potential Building Design/Association of Community Organizations for Reform Now
6438 Bee Caves Road
Austin, TX 78746 (G)
Contact: Daria Fisk (512) 327-2574

High Country News/Alternative Energy Resources Organization
Box K
Lander, WY 82520 (H)
Contact: Joan Nice (307) 332-4877

New Mexico Solar Energy Association
Box 2004
Santa Fe, NM 87501 (I)
Contact: Keith Haggard/Mary Beth Bliss (505) 983-1006

Cascadian Regional Library
Box 1492
Eugene, OR 97401 (J)
Contact: Brian Livingston/Marshall Landman (503) 485-0366

Here are the NCAT outreach workers for different regions of the country. Some of their areas are a bit ungainly, but they're a step closer to home than the center in Butte.

NCAT Extension Workers

David Colfax
The Mountain School
Box 246
Bonneville, CA 95414

James A. Foster
RD #2, Clinton Rd.
Weedsport, NY 13166

Tom Swaney (Bearhead)
Route #1
St. Ignatius, MT 59865

Council L. Smith
5785 Watermain Blvd.
St. Louis, MO 63155

Paula Schaedlich
Box 1232
Ames, IA 50010

Robert Shortreed
84 Westford Road
Stafford Springs, CT 06076

Tyrone Brooks
1314 Beecher St.
Southwest Atlanta, GA 30310

Brian C. Crutchfield
Route #1, Box 257
Morrisville, NC 27560

Francis Lee Topash
3562 Keir Lane
Helena, MT 59601

The Right Wing and A.T.: The Possibility of Mutual Aid

Increasingly, a.t. is seeming too much a step-child of only the welfare-liberal wing of the Democratic party. Yet there are many philosophical and practical aspects of appropriate technology that should appeal to conservative Americans: local control, personal self-sufficiency, "no free lunch" attitudes, distrust of government taxation and bureaucracy, wariness of multi-national corporation ripoffs, preference for small business and family farms, a "do-it-yourself with friends" attitude rather than having it "done-to-and-for-you" by the government, non-processed foods, and many deeper personal values. Likewise, there is a strain of "self-responsibility" in the soft technology movement, which is palatable to both anarchist-decentralists and right-wingers.

It is not entirely coincidental that many early U.S. centers for a.t. experimentation were founded in hotbeds of, variously, New England Yankeeism and Canadian self-reliance—the New Alchemy Institutes at Cape Cod and Prince Edward Island, Great Plains hill-country populism—the Institute for Maximum Potential Systems at Austin, Texas, and intellectual anarchism —the Social Ecology Center at Goddard College. Yet, in our normal American fascination with simply "doing-it," it seems we have used too little energy trying to understand the ethical-value roots of a.t. thought, with an aim to identifying those we hold in common with now-ignored potential allies we'll need to regain citizen control of our country. Indeed, the best inquiry into this generally unexplored area is still *The Politics of Alternative Technology* by Dickson and the infrequent movement self-critiques in *Undercurrents* magazine, both of Great Britain.

The most useful self-reliance ideas these days come not from the "more-of-the-same" moderate political center, which cannot hold even itself together, but from the radical right and left fringes. Only the ideas from the very edge of political sanity seem to enliven our future prospects today, while the middle ground is dull, if not deathly, in its tread toward the impersonal, bureaucratic fascism of large institutions and of answers too big for our human-scale problems.

If you'd like to broaden your perspective on the practical concerns of the neglected right, you might check out:

***How to Remodel an Existing Home to Prepare for Self-Sufficiency*, Joel M. Skousen, from:**
Survival Homes
Box 163
Provo, UT 84601
Other courses with a Mormon orientation on food storage, wood heat, greenhouses and family self-reliance are available.

***Survivor's Primer and Up-Dated Retreater's Bibliography*, Don and Barbie Stephens, $12.00 from:**
Drawer 1441
Spokane, WA 99210
Covers all aspects of retreating individually, in families and in groups, and living more independently. Many other publications are available. Ask for price list.

***Matter of Fact Magazine*, $2.50 for 6 issues/year from:**
5905 S. Regal Rd.
Spokane, WA 99203
Usually about 50 pages on practical self-sufficiency and crafts for "people tuned to the earth," with related advertising.

***Reason Magazine*, $15 for 12 issues/year, from:**
Box 40105, S
Santa Barbara, CA 93103
Covers the theory and application of libertarian philosophy and politics, with articles on survival preparation and planning.

***The Ruff Times*, $55 for 24 issues/year, from:**
Target Publishers
Box 172
Alamo, CA 94507
Conversationally written with personal thoughts of Howard Ruff, on current items in the news, relevant interviews and coverage of personal finances, food storage, bureaucracy and product reviews, with an air of "Be Prepared" Mormonism, tempered by an understanding of global economic and natural resource linkages.

Yet we need some perspectives which integrate right and left wing thought by combining the experiences of such people as Karl Hess, Murray Bookchin, Howard Ruff, David Morris, Hazel Henderson and Don Stephens. We need to screw up our courage and step out from our present comfortable, yet still relatively powerless political niches and talk with those we've ignored for too long, to the quiet gratitude of the middle-road Democrats and Republicans. We need not agree on everything or on strategies for changing America more to our liking, but I suspect we'll find enough to make the effort worthwhile. It's time to re-read Kropotkin's *Mutual Aid* and then stretch out an open hand.

LEE JOHNSON

JOBS

Environmental Action Foundation has job openings for two organizers/networkers to work on setting up a communications network on water management issues. Salary is $9,500/year plus benefits. Contact Kay Pilcher, Environmental Action Foundation, Dupont Circle Bldg., Suite 724, Washington, DC 20036, 202/659-9682.

Environmental Action Reprint Services (no relation) is looking for another member for their collective. Job is shipping and receiving to start, but jobs may be rotated soon. Pay is the same for all—$75 a week with liberal time off and pretty flexible hours. Contact EARS, 2239 East Colfax, Denver, CO 80206, 303/934-7182. P.S. Their new Catalog is now available for mail order books, 50¢.

Caritas Creek, a nonprofit environmental education program, is looking for an energetic fundraiser for a resident outdoor education program and summer camp that involves inner city, suburban and special ed children together in Mendocino County, California. Contact Greg Gordon, Caritas Creek, P.O. Box 23921, Oakland, CA 94563.

The Farallones Institute's Rural Center is seeking staff to assist us in our research work and to participate in our workshop/educational programs. Room and board and the opportunity to take advantage of the Farallone's resources, as well as participate in a whole life systems living situation, is offered. Salary is dependent upon receipt of grant funds and on workshop fees. We're searching for women and men to help us in the areas of solar design and construction, water conservation and greywater recycling, and composting toilets. It's hands-on work. Interested persons should have some background experience and a theoretical training. Contact Alison or Max at the Rural Center, 15290 Coleman Valley Rd., Occidental, CA 95465, 707/874-3060.

Environmental Information Guide for B.C., *edited by Arthur Gladstone, July, 1977, $1.50 from SPEC, 1603 West 4th Ave., Vancouver, BC. The West Coast Canadians always seem to have it pretty well together (I hope they'll be part of Ecotopia). If you're from that neck of the woods, you'll find this a useful resource.*

Rural Development Service of the U.S. Dept. of Agriculture is looking for an energy specialist to develop USDA policy on energy issues affecting rural areas and to assist in designing programs in energy conservation and alternative energy sources. This GS-13 or -14 ($26,000 or $30,000/yr.) position works directly with the RDS deputy administrator. Contact Carl Larsen, Deputy Admin., Rural Development Service—USDA, Rm. 4117, South Bldg., Washington, DC 20250. Ph. 202/447-7595.

Iowa Center for Local Self-Reliance is looking for a director. He/she performs research, provides consultation to public on self-reliant technologies, lifestyles, energy conservation and solar. Starting salary: $200/month and room; or $250/month. Box 1904, Des Moines, IA 50309.

Haight Ashbury Community Radio/People's Media Collective has a series of radio program tapes available on the history of the U.S. Tapes include: "Oral History of the Depression," "Indian Land, African Lives," "Early Labor Organizers." Contact them for a complete listing with prices: 618 Slander Street, San Francisco, CA 94117 (415/752-5750).

Volunteers in Technical Assistance (VITA) is compiling a directory of appropriate technology resources around the world. If you would like to be listed, send brochures and project descriptions to Brij Mathur, VITA, 3706 Rhode Island Ave., Mt. Ranier, MD 20822.

NSF Announces Science for Citizens Program

The National Science Foundation Science for Citizens (SFC) program plans to award 15 to 25 Public Service Science Residencies and 15 to 25 Public Service Science Internships, and make approximately 20 awards for forums, conferences and workshops in 1978.

Public Service Science Residencies and Internships enable scientists and students of science and engineering to undertake up to a year's activities with citizen groups and other appropriate organizations in need of their expertise. Residents receive a stipend of $18,000 for a 12-month tenure, with current salary matched up to a maximum of $25,000; interns receive a $6,000 stipend for a 12-month tenure. Twenty-nine residency and internship awards were made during the first year of the program.

Public Service Science Residencies and Internships Brochure, SE 78-61, will be available January 1, 1978. Applications must be received by March 15, 1978, and awards will be announced in late June 1978.

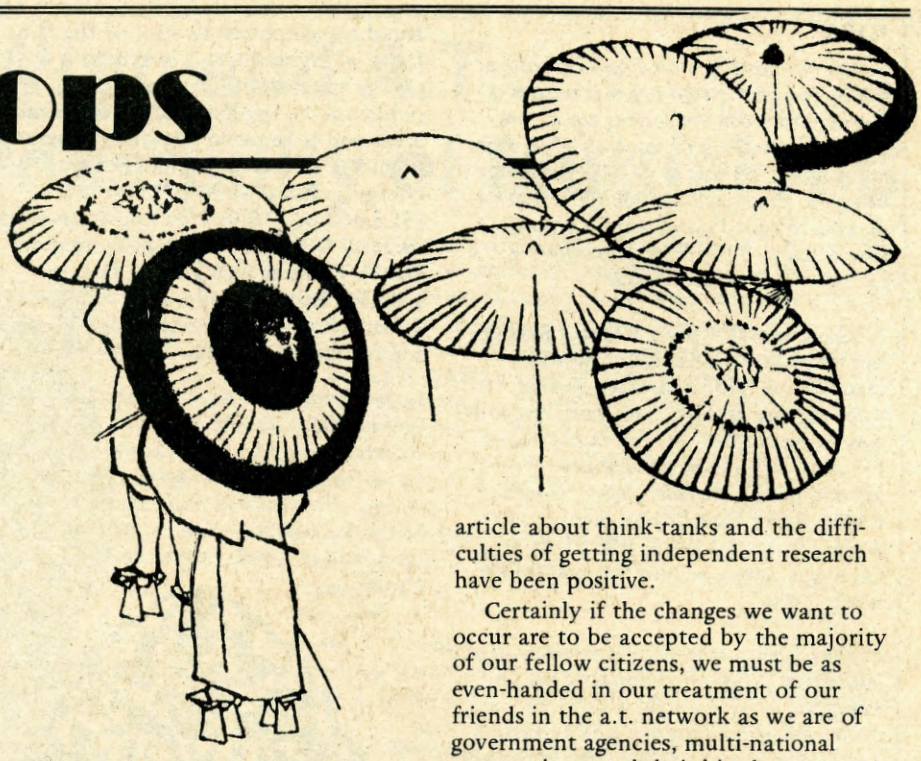
Science for Citizens Forums, Conferences and Workshops enable nonprofit organizations to bring together citizens and scientists to provide citizens with access to expertise on science-related policy issues and to better inform scientists as to those issues of concern to citizens. Nineteen proposals for forums, conferences and workshops received awards during the first year of the program.

Science for Citizens Forums, Conferences and Workshops Guide for the Preparation of Proposals, SE 78-63, will be available January 1, 1978. The deadline for receipt of preliminary proposals is March 1, 1978; formal proposals must be received by May 1, 1978. Awards will be made in August 1978.

Requests for copies of the announcements should be directed to Science for Citizens, Office of Science and Society, National Science Foundation, Washington, DC 20550 (202/282-7770).

Rush

Raindrops



I'm sure by now all of you must be wondering what is happening here in the Rainhouse—are we quitting? moving? bringing in new people? Rumors have been flying (especially among ourselves). Well, as of today (Sunday, December 11), we have good news to share with you. *RAIN* is alive and well—just going through more of its usual changes and transitions.

Joan Meitl has now been a Rainmaker for about two months, taking on more and more of the day-to-day work of subscriptions, checkbook and mail orders. She's the person you should address yourselves to on questions about getting *RAIN* in your mailbox as safely as possible once a month. She's a champ and has taken over so much of my load that hopefully I will soon fulfill my longstanding promise to do some more substantive writing.

The reason today is a special day is that we just hired another person to join our group. Steve Ames is another Ohioan who has been working in Ann Arbor and Toledo on social change issues for quite a while. It's been a long search, but we look forward to his moving out here in January. We do have an odd karmic association with Northwestern Ohio, though: Tom grew up there and former staffers Steve Johnson and Rhoda Epstein both went to school there . . .

January will be a time of changes. Tom and I are planning to move into the house on the Oregon coast that we've been building since July with my brother, Kip. For awhile it looked like we might move the whole magazine out there, but now it feels more appropriate for Tom and I to create a space for ourselves away from the crazy days here. We'll continue to write for *RAIN* and for awhile at least will spend a couple of days a week in Portland.

Lee also will put a little distance between himself and the daily goings-on of the magazine. He plans to do some consulting work again—perhaps a jobs and energy study and some experimenting with his windmills. All three of us feel a strong need to get back to some real-life hands-on stuff for awhile. Tom and I intend to monitor carefully, for instance, our drum composting privy and yet-to-be-designed grey water system. We'll all feed the results of all this back into the magazine as it comes into focus.

We still need one more person for the daily work on the magazine—probably a technical person to balance Steve and Joan. Are you someone with experience with alternative energy systems, recycling, toilets or something new who would like to do some writing, answer questions and maybe even run a workshop or two? Send us a resume and a statement of how you'd like to contribute. We'll be looking around for the next two or three months. —LdeM

Taking Off the Gloves—

You may have noticed we've been taking the velvet gloves off a bit more around here and are trying not to be such "nice guys." We always knew people expected experienced evaluations of projects and publications as such critiques are the necessary mid-course corrections that will keep us all on the sensible pathways and out of the flashy cul-de-sacs. Due to our subscriber-based financial independence, we need not worry about offending advertisers or losing grants. And for that trust, we owe you honesty. Also, we've grown tired of buttoning our lips on bureaucratic stupidity and corporate greed, some of which we've experienced firsthand, including that time four years ago when a Portland utility tried to get Steve Johnson, *RAIN*'s founder, and I fired when we ran Randy Skoog's antinuclear reading list after printing their pro-nuclear one. Seems they didn't like equal time. But that's a piece of documentable local history for another day.

Thanks for your suggestions for future articles and for your favorable comments on Bill Day's critical review of John Vivian's *Wood Heat* book and to criticism of the DOE-Honeywell Corporation-run Transportable Solar Lab. And, so far, comments on the article about think-tanks and the difficulties of getting independent research have been positive.

Certainly if the changes we want to occur are to be accepted by the majority of our fellow citizens, we must be as even-handed in our treatment of our friends in the a.t. network as we are of government agencies, multi-national corporations, and their hired guns. Otherwise we're simply faking it.

Like everyone, we make mistakes, so let us know when we miss the mark or we overdo it with a mailed fist. Meanwhile, if you've any suppressed document stories you can back up, let us know. The gloves are off! It feels just right.

Some final ideas for personal action: Other groups with money in the bank might want to check whether their financial resources are being used appropriately, or whether their neighborhood is being redlined and their bank is also negative on energy-conservation and solar loans . . . solar redlining. We heard our bank's loan VP talk disparagingly of solar home heating at the regional solar conference we helped organize, so we've moved our checking and savings accounts to a pro-solar bank. Since we also publicized our move widely, it's still getting local newspaper coverage, and we'll be helping a local magazine do an in-depth story on the problem. So don't forget the PR! It really helps to reach out to others, hopefully jogging them into action as I'm trying to do to you. —LJ

Librarians and mailbox watchers, take note: There will be a longer than usual delay between issues next time. We'll do a combined February/March issue (Vol. IV, No. 5) that will come out in late February. Nothing to worry about —just our mid-winter breather which, as usual, we have amply filled up already!

RAIN PUBLICATIONS

☐ ***RAINBOOK: Resources for Appropriate Technology*, 256 pp., April 1977, $7.95.** Resources for changing our dreams and communities. Compilation of the best of RAIN through Spring 1977, with much new material on economics, communications, health, energy, community building and other areas. Fully indexed. **Note: *RAINBOOK* incorporates A.T. Sourcelists and Coming Around.**

☐ ***Ecotopia Poster*, by Diane Schatz, 2'x3', $3.** A reprint of the "Visions of Ecotopia" line drawing that appeared in the April '76 poster issue. Great for coloring.

***A.T. Sourcelists*, August 1976, 50¢ each, any 6 for $2.** Two to five pages each, prepared by RAIN for the California Office of Appropriate Technology:

☐ ***Direct Solar Heating/Cooling***
☐ ***Energy Conserving Landscaping***
☐ ***Wind Energy***
☐ ***Solid Waste Utilization***
☐ ***Drying Up the Toilets***
☐ ***Diseconomies of Scale***
☐ ***Bioconversion: Methane Production***
☐ ***Weatherizing: Home Insulation***
☐ ***Costs of Urban Growth***
☐ ***Natural Pest Control***
☐ ***Appropriate Technology***
☐ ***Low-Cost Construction***

☐ ***Employment Impact Statement*, October 1976, 2 pp., 50¢.** A simple, step-by-step way to figure the employment impacts of a new industry and consider the benefits of different options.

☐ ***Consumer Guide to Woodstoves*, revised Sept. 1977, $1.** Compiled reprints of Bill Day's article on selection, installation, repair of woodstoves, wood cookstoves and wood furnaces of all kinds.

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

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

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

***Coming Around: An Introductory Sourcelist on A[illegible] Technology*, prepared by Lane deMoll [illegible] edition, September 1976 $1**

No longer available—replaced by *Rainbook* and a.t. sourcelists.

ral theory, ecol[illegible]y, manufac[illegible] institutions, agriculture, [illegible]sportation, self-reliance and energy. [illegible]clude how-to publications but directs you to them.

***Back Issues Available*, $1 each.** List those desired: Vol. I, Nos. 7, 8, 9; Vol. II, all 9 issues (Vol. II, No. 6 was a poster issue; Vol. II, No. 9 was a special issue on Northwest Habitat.) Vol. III, all ten issues; Vol. IV, Nos. 1 & 2

Subscribe to RAIN

RAIN Magazine · 2270 N.W. Irving · Portland, OR 97210

Subscriptions begin with next regular issue. Order back issues separately.

_____

_____

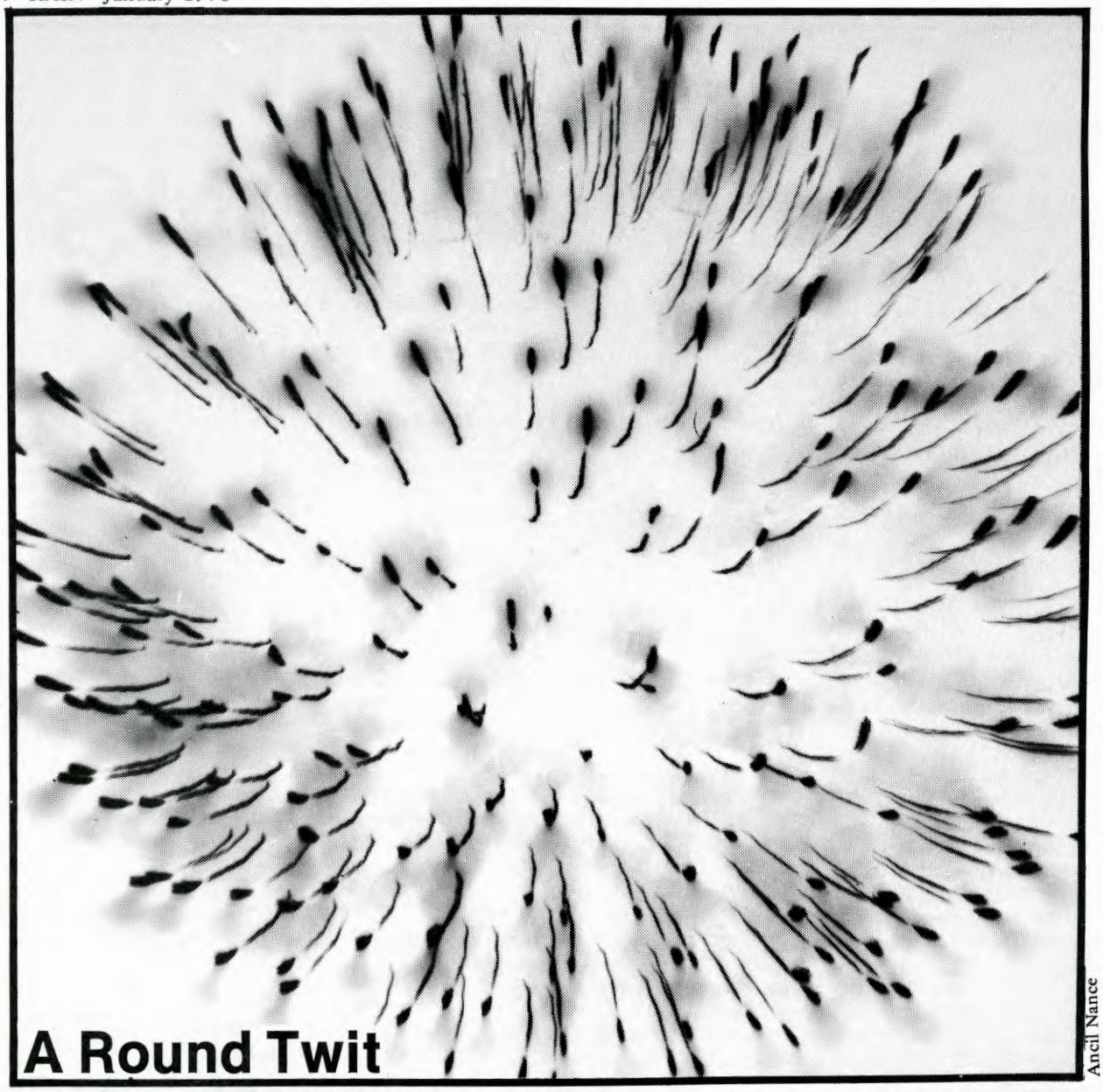
_____ Zip_____

The Post Office won't deliver magazines without zip codes.

SUBSCRIPTION RATES:

☐ Regular: $10/year — 10 issues $ _____
☐ Living Lightly: $5/year — 10 issues (income less than $5,000 . . . ?) $ _____
☐ Add $2.80/year for Canada and Mexico $ _____
Inquire for other foreign rates
☐ Publications $ _____
☐ Donation $ _____
☐ **Add $5 billing fee if payment is not enclosed** $ _____

TOTAL AMOUNT ENCLOSED $ _____



Here's a gift to help you start the New Year off right. People keep telling us they'll get in gear and do all the wonderful things they've been dreaming about—as soon as they get aroundtoit. So here it is—a Round Twit.
No more excuses—go to it! We're expecting great things from you.
—TB

RAIN
2270 N.W. Irving
Portland, OR 97210

Forwarding and Return Postage Guaranteed