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RAIN: Journal of Appropriate Technology

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RAIN

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Ancil Nance

RAIN access

Navaho blanket

APPROPRIATE TECHNOLOGY

Farallones Institute has produced a good series of construction plans which include materials lists and assembly instructions for the following: window greenhouse, solar oven, fly trap, compost bins, cool closet, container garden, cold frame—all available for $.75 each; solar greenhouse and rabbit and chicken shelter plans for $1.25 each. Associate members ($25 annual fee) receive choice of 5 of the above free with membership. Also available from them are fact sheets geared to the general public on integrated house management areas such as composting and insulating doors and windows. Write to them for a complete publications list, class and workshop information, apprenticeships, and tours of their superb demonstration house at:

Integral Urban House
1516 Fifth Street
Berkeley, CA 94710

—LS

Women in Solar & A.T. Conference

What a joyful sight it was to see all those strong, secure, involved *female* faces talking about appropriate technology!—especially for those of us accustomed to being almost the only woman in the room. There were technicians—women who know how to build solar collectors, design adobe homes, and manage a biogas plant. There were bureaucrats—women who know how to thread their ways among the delicacies of budgets and proposals. There were librarians and information-sharers, health advocates and community organizers. Some of us were experts, some of us were looking for ways to fit in. For those of you who wondered—barely a vituperative word against men was heard. We talked about the hows and whys of our particular fields of expertise, we exchanged perspectives on the trials and benefits of working within a largely male movement, we shared personal stories on how we got where we are (some with formal training, many by hard work and good luck), and we rejoiced in the feeling of such sisterly solidarity. Many of the women on the panels were speaking in front of an audience for the first time. It was exciting to hear how articulate and well-informed we all were. It was an event I hope will be duplicated in many regions and would love to see happen again next year. Thanks again to Elizabeth Coppinger and Liz Stewart of Ecotope Group for putting it on.
—LdeM

Sad word has reached us of the demise of the Lane County Office of Appropriate Technology in Eugene, Oregon—the first county-level office of its kind. It's not totally dead yet, but conservative county commissioners have changed its name to the Energy Management Office (or some such), cut its staff from ten to one, and are generally making life difficult. We'll try to have a more in-depth report on its problems and successes in a future issue. —LdeM

Ferrocement Water Tanks, **S. B. Watt, 1978, $8.95 from:**
International Scholarly Book Service
P.O. Box 555
Forest Grove, OR 97116

Another good guide from ITDG, for planning, designing and building low-cost ferrocement water tanks and jars. Focuses on a series of alternative designs from many countries employing makeshift or no formwork. Detailed lists of necessary materials, photo construction guides, necessary theory and design details. A well done approach. —TB

from Ferrocement Water Tanks

SOLAR

A Solar Greenhouse Guide for the Northwest, **Ecotope Group, 1978, 66 pp., $5.00 from:**
Ecotope Group
2332 East Madison
Seattle, WA 98112

A few weeks ago I participated in an attached solar greenhouse workshop organized by some friends. Preliminary work resulted in the pouring of the foundation and the gathering of the required materials. The actual construction of the greenhouse took place during the workshop weekend in the fashion of an old barn-raising. This manual was relied upon heavily in the design and construction phases. So I can tell you from first-hand knowledge that it works. The *Solar Greenhouse Guide* has the usual sections on heat loss calculations and sun path charts, but what makes it stand out is the step-by-step construction explanation with appropriate illustrations. Sample architectural drawings, materials and tools list, plus a section on food production provides everything else you need to know. The only additional information that might be necessary is the basic carpentry skills of one or two friends. —PC

Solar Energy for Lane County, **edited by Joyce Theios, 1978, 32 pp., free from:**
Lane County Office of Appropriate Technology
125 East 8th Ave.
Eugene, OR 97401

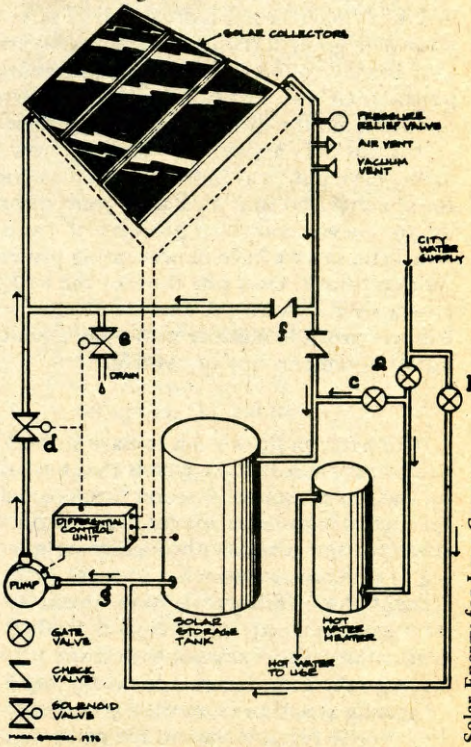
This local office of appropriate technology has published another excellent resource to encourage, educate and assist its community in the use of alternative energy systems. It is a basic overview of solar applications with resources, glossary and good illustrations. We'd be in great shape if every county could provide such easy access to information as relevant as this. —LS

Dear Inundation,

. . . If you have the time, please check your library for the microfilms of *Scientific American* (and its supplement). Page 376 of the June 15, 1878 issue had the best piece on solar ovens I have seen. It is about one W. Adams and his (or her) experiments with such cooking in India. The illustration accompanying the text is very similar to a currently marketed solar oven. On page 214 of the October 3, 1885, issue is a report from La Nature in which a passive device using ammonia as a primary in a series of flat plates pumps water. At Auteuil (Hemingway and others wrote about the racetrack at this suburb of Paris) a system consisting of 40 sq. yards of collector pumped 792 gallons of water 65 feet, or so I gather from the article. Passive pumps for trickle downs and other kinds of flat plates? How about micro/mini hydro household systems?

New Alchemy is going to have a benefit concert/harvest festival with Paul Winter Consort on the 30th. We will all sing with the wolves in a bio-shelter.

Yours,
George Mokray
Cambridge, Massachusetts



SOLAR HOT WATER SYSTEM WITH AUTOMATIC DRAIN DOWN FOR FREEZE PROTECTION

from Solar Energy for Lane County

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

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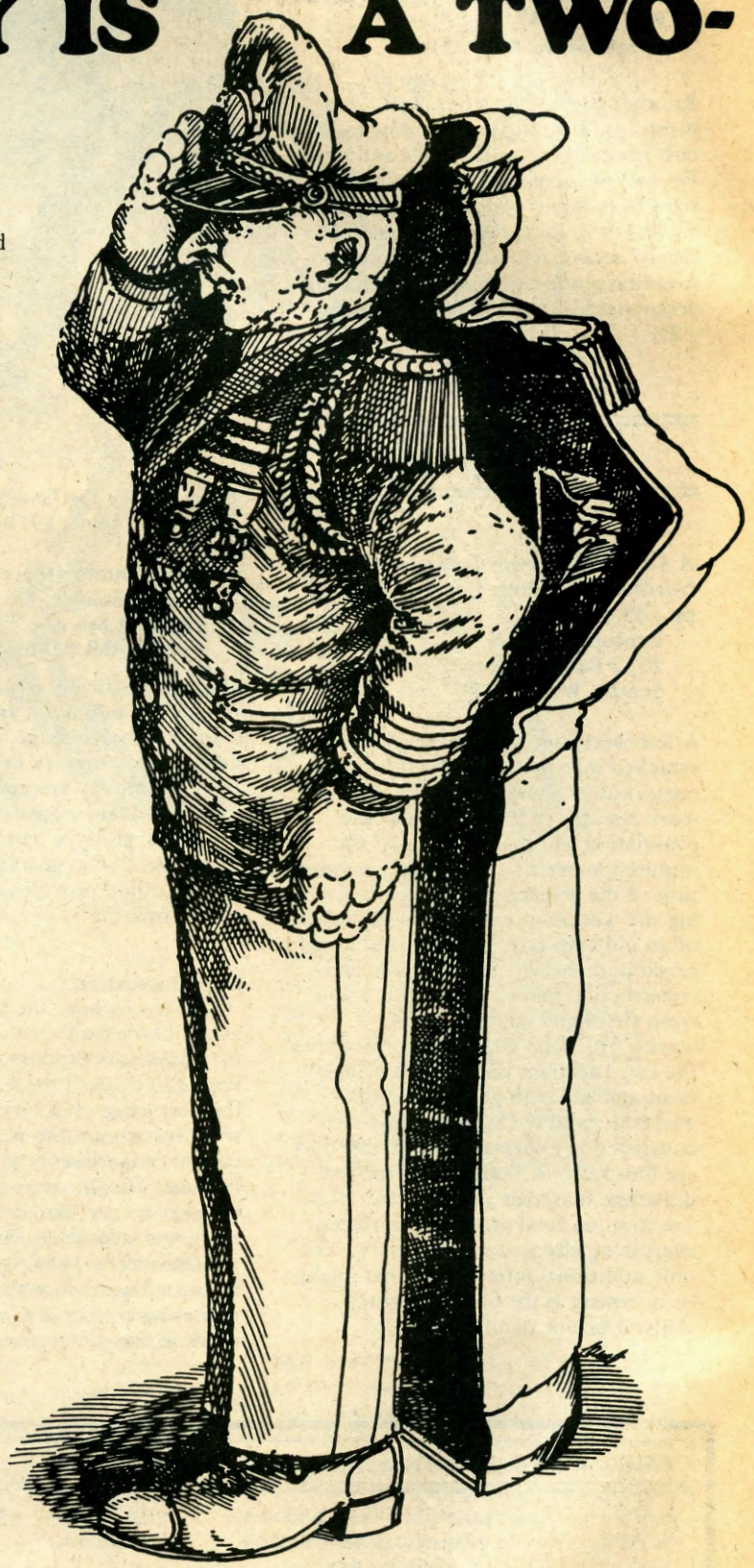
DEMOCRACY IS A TWO-



Somewhere in the dim, dark reaches of the last half century we loosened a crucial grip on control of our lives—the right to determine how much and for what tax money would be extracted from our pockets and emptied into bottomless government coffers. Federal problems seemed so far away, our elected officials seemed trustworthy, and inevitably more knowledgeable about what was needed to deal with large problems than we are. And we shared a dream that a government that could win a world war and develop an atomic bomb could legislate or regulate or delegate away the intractable problems we couldn't bother to get honest enough to resolve.

The right to levy income and other taxes without local approval was a *vast* transfer of power from individuals to government, as we are now learning. The continued funding of government agencies today rests on their pleasing Congress, not taxpayers. Congress has the power to attempt to resolve (or meddle with) any problems—to do most anything it wants —at the federal level without asking if we wish it done or feel that to be the best way to do it.

It's not just federal agencies that are affected. Federal funding for state and local projects, such as freeways, sewage plants, hospitals and schools is set up purposefully to be hard to refuse and to influence use of local funds. If you don't approve a dam or freeway or urban renewal project for which government funding is available, do you get a tax reduction or refund instead? Ha! Your money goes to someone who *is* willing to spend it!

As a result, control of our state and local governments, academic, medical and transportation programs has largely followed the power of our federal tax dollar. Our city and state governments have chafed under federal regulations, but inevitably have found federal dollars safer and easier to go after than going directly to local taxpayers for funds. They also quickly found that such funding sources freed them to pursue their own institutional vision of Utopia without interference from the different dreams of their constituents.

It's not only appalling to discover how far our local governments have put us as individuals and as communities into debt for ill conceived sports palaces, convention centers, utility, urban renewal and other projects—it's also appalling to learn how little say we have in preventing projects and expenditures we don't want. Over one third of the budget of many cities now goes merely to pay finance charges on such projects. The bankers profit handsomely. We pay equally handsomely. The question remains one of control.

Old party politics seem to have shifted around in response to this problem and the trends that have developed because of it. The old conservative stood for personal rights and privileges (particularly those of the more privileged) while the liberal stood for social equity through governmental action. The souring of that sweet dream has brought forth new coalitions straight from *Gulliver's Travels*, the Little Enders—people who seek social equity through individual responsibility and community effort aligned with those who seek personal gain through the same means against the Big Enders, who believe in getting at action from the big end of the egg—those who look yet to big government for personal or social salvation.

by Tom Bender

WAY STREET

But one message seems clear today—people are tired of expensive, unresponsive and self-serving institutions—particularly ones to which we are allowed no alternative. People are demanding control over their tax money and what is done with it. Local tax revolts, for whatever reason, only aggravate the problem—for as we can see in California, our institutional tendency is for the larger bureaucracy to bail out the smaller (and gain control of it) rather than to face and make basic changes in how we do things.

Citizen participation in determining governmental actions may sound like some foggy, sweet ideal, until we realize that according to most reports, China, with a population of nearly a billion people, is already doing just that. Production goals, government programs and community development are arrived at through negotiation and discussion in village, district, county and national meetings, and go all the way back to the individual for ratification, according to reports in *Fanshen*, by William Hinton. If true and the system does work, we've been vastly out-democratized!

Actually, none of this is really any different from the powers we already have to vote on state and local bond issues as well as many special programs. We don't have that option with federal programs and taxes. Why not? If we can't regain that power, we've got to regain control at the other end of the tube. A process that could accomplish some of these goals at that end would be a referendum/rebate system in which a state refusing to participate in a federal-funded freeway program or a community voting down a federally funded fluoridation program would get the allocated funds refunded to the affected taxpayers. Is it an unreasonable dream to have *your* vote count on the CIA budget, nuclear power, neutron bombs and government salaries?

No real balance of power in our society can be achieved unless we regain balance between collective needs and local and individual control over governmental budget and tax powers used to fulfill those needs. Dreams, budgets, programs, and taxes need to be developed through dialogue between all levels of government and the people ourselves, as governments inevitably serve different ends than people, and to remain a democracy, the power must remain with the people. □

WORK

***Democracy in the Workplace*, 1977, 98 pp., $5.00 plus $.50 postage from:**
Strongforce
2121 Decatur Pl., N.W.
Washington, DC 20008

***Democracy at Work*, Daniel Zwerdling, 1978, 190 pp., $5.00 plus $.50 postage from:**
Association for Self Management
c/o 1414 Spring Road N.W.
Washington, DC 20010

Worker control, self management, cooperative, collective—these are key words in describing a significant move towards changing our lives, our economic system, our jobs, our politics. It is a strong and challenging step that many people are taking to become less exploited and regain control of our lives and environment. These two books are excellent complementary sources to encourage and enrich that experience. *Democracy in the Workplace* lays out the practical and philosophical questions that we need to consider in beginning the process of self management—from organizational, educational, to legal, marketing and financial aspects, as well as a basic folder for starting a self-managed business and case study of a farm workers production co-op, making this a very comprehensive sourcebook. *Democracy at Work* presents experiences of cooperatives or worker controlled businesses throughout the world which provide rich learning from the experiences of those involved. Also a clarification of what "workplace democracy" means and a discussion of labor unions in relation to worker self-management. Both books have excellent resource information, and I highly recommend them. —LS

from Democracy in the Workplace

***Non-Profit Food Stores*, 1977, 64 pp., $3.00 plus $.50 postage, from:**
Strongforce
2121 Decatur Pl., N.W.
Washington, DC 20008

Another excellent handbook from the Strongforce people that documents community-worker controlled businesses. The experiences of workers in four food co-ops are shared in this manual, which provide insight into the difficulties and joys of participating in the process of worker management. (Boston Food Co-op, U.A.W. Worker's Market in Detroit, New Haven Food Co-Op, and Common Market Cooperative in Denver.) There's also a section on operating community food stores as well as a good resource list. —LS

WOOD

***Wood-Fueled Power Generation: A Potential Source of Energy for Northern Michigan*, Michigan Public Service Commission, 1977, free from:**

Fuels Planning Office
Department of Commerce
6545 Mercantile Way
P.O. Box 3022
Lansing, MI 48909

More and more states are turning to their local renewable energy resources and discovering, as Michigan does in this study, that they can provide a large percentage of even today's excessive energy use. So far so good. But most such studies are focussed much too narrowly to provide really meaningful answers or even to raise significant questions forcefully enough to get additional inquiry into them to occur. Using this report as an example, it finds wood waste supplies in northern Michigan to be more than adequate to provide the region's present electrical demand. But it doesn't examine necessary actions to ensure continued future availability: maintaining soil fertility and organics, prevention of overcutting, forest zoning, replanting and management for sustained yield. It doesn't question if there are more desirable uses, such as furniture making, specialty wood products and firewood, for considerable amounts of "waste wood." It does not compare the use of wood for electrical generation with other less expensive uses of wood for energy—direct wood heat or co-generation of steam for industrial or space heat with steam for electrical generation, or explore how much demand for the more expensive electrical energy could be reduced by use of such alternatives. It suggests that energy plantations might increase energy productivity of the forests, without examining whether the combined value from timber and waste-wood energy in multiple-use forestry is preferable. Although wood-electric appeared competitive in small decentralized plants, neither simple means of improving boiler efficiency (preheating the wood chips with exhaust gases to reduce moisture content) nor the costs of distribution, reserves requirements and systems reliability were included beyond a mention that they weren't examined.

A good study in itself, with good references, that shows the considerable experience and proven reliability of wood/electric systems that now exist, and within its scope a good discussion of their competitive economics. But unless the questions are knowingly being addressed in related studies, the responsibility remains in studies such as this to at least clearly indicate what issues have not been addressed and require further study. There is a danger with studies such as this that do not begin to think more comprehensively. They can lead us to use the right energy sources to continue to do the wrong things rather than shift to patterns appropriate to such new conditions. —TB

Russian Type Masonry Fireplace-Stove Plans, $5 from:

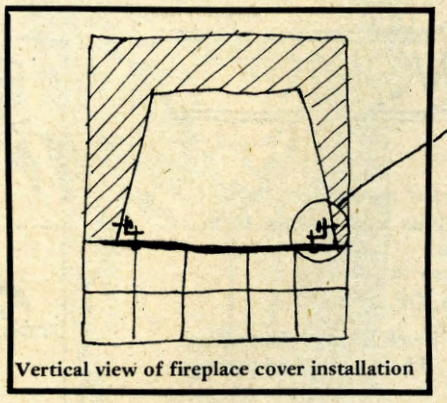
Timeless Products, Inc.
Box 143-J7
Roxbury, CT 06783

Plans for building your own Russian type masonry fireplace-stove with unique features: 36 hrs. per load, 100,000 BTU per hr., cooking and hot water, separate fireplace, ten form variations. (Info from *Country Journal*, July '78) —Marjorie Posner, Alsea, Oregon

There have been many efforts to improve fireplace efficiency over the decades. They range from the "Rumford" design in masonry fireplaces to prefabricated steel air circulating units and a wide variety of heat exchangers which sit in the existing fireplace cavity. At best, the efficiency achieved by these techniques barely approaches 50 percent of the efficiency of the average free-standing woodstove.

At this time, one of my greatest concerns is the lack of durability and safety in fireplace heat exchangers. These units are usually constructed of steel tubing (round or square). The rate of deterioration of the tubing (often doubling as the wood grate) is often quite rapid. Failure of a blower fan motor, or a temporary interruption of electrical service, can greatly accelerate deterioration of the air-cooled steel tube. The eventual result of the steel tube failure is a spray of hot ashes and embers onto the home carpet. I recommend avoiding heat exchange contraptions constructed in this manner.

Another method of utilizing fireplace chimneys is the installation of a fireplace-stove insert in the fireplace opening. One disadvantage of this idea is that chimney cleaning is made very difficult or *nearly impossible*. The entire unit may need to be completely removed for chimney sweeping. Some products are advertised as being "permanent installations" and are securely fastened in place. Chimney cleaning is a regular, needed maintenance chore which should not be hindered or discouraged. I also have yet to find a fireplace-stove insert incorporating the necessary features required for efficient wood combustion. Glass windows usually leak air, steel doors and door frames warp (leaking more air), etc. If possible, I'd avoid these ill-conceived contraptions.



Vertical view of fireplace cover installation

The best utilization of masonry fireplaces is the use of the chimney as an exhaust vehicle. If the chimney is located on an exterior wall, it's reasonable to assume that the creosote accumulation will be greater than if it were enclosed inside the building. A free-standing, efficient wood-burning stove can be installed in such a manner that the fireplace heat loss is diminished and the efficient wood burner provides a large share of the heat required to make your home comfortable.

Whatever the method of installation, one basic requirement must be met. No air should be allowed to enter the chimney without passing through the stove. Using the taller kinds of vertical exhausting stoves, it is necessary to put a new flue opening above the fireplace opening. Some local codes may require this form of installation. If the stove exhausts horizontally at a level not exceeding the height of the fireplace opening, it is usually possible to exhaust through the fireplace cavity into the chimney.

A major advantage of exhausting the stove through the fireplace opening is that no cosmetic damage is done to the face of the fireplace. This type of fireplace closure is easily removed for chimney cleaning.

1. The first step in closing off the face of the fireplace is to have a sheet metal shop cut a piece of 16-gauge "black" sheet metal to cover the fireplace front. It should extend two inches past the edge of the opening so that it overlaps the brick face. A slight "kink" should be put in the edge of the metal.

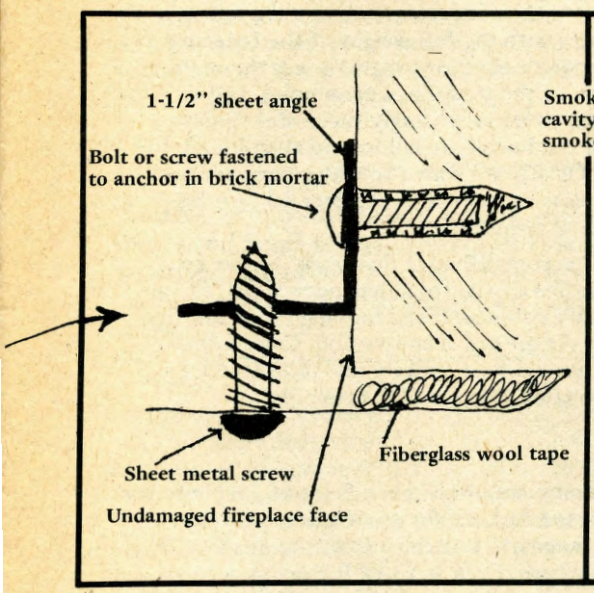
2. 16-gauge sheet metal is needed for constructing a 1-1/2" sheet 90-degree angle (like angle iron) to be fastened on the inside of the fireplace opening.

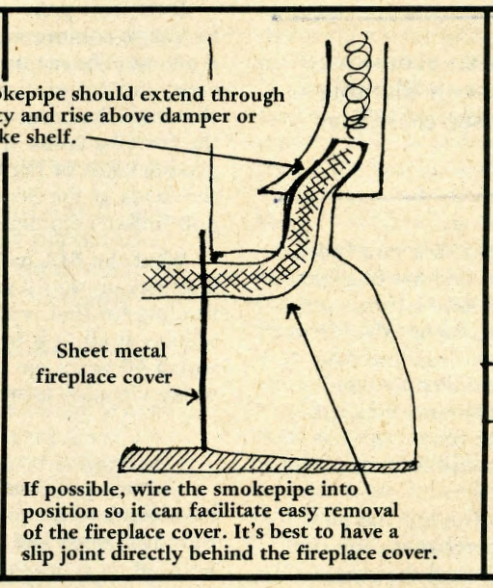
3. The angle is fastened to the masonry by drilling holes in the brick mortar and using screw or bolt anchors (at least 2) on each side and at the bottom. Usually the bottom angle must be altered to fit the slight angle or height changes where the hearth and fireplace floor meet. The sheet angle, fastened across the top, is held in place by bolts fastened to the steel lintel. If there are no existing threaded holes, you must drill and tap at least two.

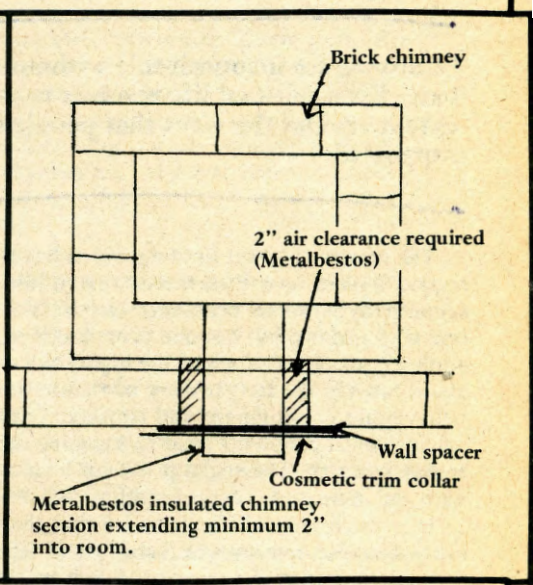
and exhausted into the fireplace cavity, produced a violent inferno in which the Fisher stove was catapulted into the living room along with the fireplace cover. At the same time, a raging creosite fire was consuming the debris in the fireplace cavity and in the chimney.

To enter the chimney above the fireplace opening , simply follow the previous instructions for covering the fireplace front, eliminating instructions 6 and 7. It's now necessary to place a new opening in the chimney.

If the brick chimney is exposed with no combustibles nearby, a new connector pipe opening can be achieved with an electric drill, a masonry drill bit and a hammer and chisel. The first step is to outline the proposed opening with a series of small holes drilled in the masonry. The next step is to carefully chisel out the center of the outline. Using mortar mix, a thimble







Turn Your Fireplace Into an Asset

by Bill Day

4. Fiberglass tape (usually used to insulate pipes or tubing) can be used as an air gasket between the sheet steel fireplace cover and the masonry front. If necessary, small pieces can be stuffed in each mortar joint if the joint is recessed over 3/16".

5. Sheet metal screws placed 1" from the corner of the opening and approximately every 6" are used to fasten the cover to the sheet angle.

6. A saber saw with a metal cutting blade is used to cut a hole correctly sized and positioned for your stove's exhaust. Often, it will be necessary to trim out some of the sheet angle fastened to the lintel to allow clearance for your stovepipe.

7. When inserting the smokepipe, be sure it *extends through the fireplace cavity and up past the smokeshelf or damper.* Usually squeezing the round pipe to an oval will allow it to pass a narrow damper opening. Creosote deposits in the fireplace cavity result from not following this final instruction. More dangerous problems could result from a suddenly ignited accumulation of volatile gases in the fireplace cavity. Lyle Lamont, former building official in Eugene, Oregon, recently explained how a Fisher stove, combined with a fireplace cover

can then be inserted and cemented in place to provide a smooth receptacle for the single wall connector pipe.

A chimney concealed behind lath and plaster, sheetrock, paneling, or a 4" wall partition will require extra work. I recommend using a piece of *insulated* (not triple wall) chimney material to provide adequate protection from combustibles. (Verify your local code requirements before beginning your project.)

Instead of a thimble embedded in the chimney, the insulated connector is positioned so that the inside edge is flush with the inside of the chimney flue and extends at least two inches past the wall or partition into the room. The air space clearances suggested by the chimney manufacturer should be rigidly maintained. A wall spacer is used to provide extra support and seal off the wall opening. Trim pieces are available for cosmetic trim. Remember that the diameter of insulated chimney is larger than the corresponding size of single wall connector pipe and will require a larger hole in the masonry.

Please check with your local Fire Department or building officials to determine if your plans have their approval.

You have to experience the welfare economy set up by federal agencies on reservations to truly understand its power to destroy cultures and people's lives. It is as intense a microcosm of the destruction-prone larger economy as you will ever find. That's why when Native Americans start reaching out to reestablish their economic primacy—and hence their cultures—there's a lesson in it for us all. The Autumn '78 Akwesasne Notes *article "Regaining Control Over Our Lives," excerpted here, has helped forge strong new connections between the goal of Native self-determination and the use of appropriate technologies. Its themes are better detailed in the Sept./Oct. issue of* Self-Reliance, *which notes examples of Native self-sufficiency projects across the country. Everywhere, there are people seeking to Mend the Hoop. —SA*

Native communities in the United States and Canada possess a surprisingly low number of people participating in any form of material production. In most cases, people are not producing the things the community needs. They are on the bottom rung of the economic ladder, and they are trapped there by the enormous grants and the welfare system which is the reservation economy. Conditions may be better materially under the welfare economy than they were during the period of "benign neglect," but the basic problems remain unaddressed. Part of what has happened is that the motivation to address those problems has been removed for a lot of people. When asked about the future, most of the federally funded people respond that the U.S. has a "trust responsibility" to Indians. They think the federal funding will keep coming in forever. . .

"Cultures are inconceivable without an economic base. Even spiritual life revolves to a considerable extent around the ways that people see their lives supported."

The massive federal funding which has flooded into Indian reservations in recent years has created jobs and has brought accompanying social problems. On the Yakima Nation, everyone who wants a job has one. Yet, Yakima also has the highest adolescent suicide rate and the highest alcoholism and drug abuse rates in the long history of that nation. People who believe that employment and employment alone is a key to solving social problems need to examine the record in the Indian country. The social problems bear a visible association with the increased federal funding.

It is much more difficult to see that the funding has added much to these communities' abilities at self-reliance, however. A quick review of the grant proposals will reveal that the federal dollars were intended to stimulate skill development and motivation which was supposed to lead to self-reliance among Native people. It hasn't worked. Indeed, even the attempts at real models of economic development have followed the route of the Economic Development Assistance/ Bureau of Indian Affairs efforts to make reservations into tourist areas, efforts which cost staggering amounts of money and which ended, in almost every case, in utter failure. The BIA policy of "self-reliance" has been, in the kindest possible words, unenlightened. . .

Economic policies such as industrialization were introduced to Native communities with the full weight of the federal government. The major target of those programs was the replacement and destruction of the traditional economics, and to that end, the programs were surprisingly successful. Today, the growing lands of the Pueblo lie fallow and abandoned, the grazing lands of the Oglalas are leased to white ranchers, and the fields of the Senecas are rented to commercial farmers—non-Indian commercial farmers....

What the BIA has accomplished is that many Native communities presently suffer almost total dependence on federal funding for their very existence. If the funding can claim any success at all, it is in the area of acculturation. Communities which 40 years ago were almost entirely self-sufficient are today virtually assimilated into the U.S. economy. . .

Culture and economy are inseparable. A lot of people today have come to accept the BIA definition of culture as referring to music, dress and language. But cultures are inconceivable without an economic base. Even spiritual life revolves to a considerable extent around the ways that people see their lives supported. Indeed, it is arguable that peoples' personal relationships and their relationships to their environment are molded by the ways in which they meet their needs, and the manifestation of those ways is what we call culture. In the absence of culture, there can be no economy. In the absence of economy, there is no culture. All that remains is the memory of culture. People who promote music and costume-making in urban cultural centers are not promoting culture, they are

Native Economies

THE PROMISE OF APPROPRIATE TECHNOLOGY

promoting the memory of culture. One of the alarming aspects of the loss of culture (of acculturation) is that in the absence of processes which meet peoples' needs, social disintegration occurs. That is why acculturation is associated with alcoholism, suicide, family disintegration, and all the other social ills that the federal government has programs to control. It is a model of the process of colonialism. First they create the problem, then they offer prescriptions as remedies. . .

The logical response to that process is that Native people must develop, or redevelop, their own economies. To develop a Native economy (and almost everyone is in favor of that, at least rhetorically), we are immediately forced to deal with overall questions concerning what is called technology. At the moment, technology is too often treated as a given. All technology, so we are told, is Western technology. If you are talking about providing housing, a lot of people think that there is only one technology which builds houses. In truth, there are many technologies, and many kinds of housing. People who are serious about the need to develop a Native economy are faced with the problem of becoming familiar with the technologies which meet their needs.

"Native communities don't need 16-foot combines, they need food to eat. They don't need plywood factories, they need homes. There is a need, on a very practical level, for people to begin to think small."

The idea that Native people can adapt technology is not new, but there are lessons to be learned about the social impact of new technologies. Technologies can alter culture. Consider for a moment the introduction of the horse to the Native peoples of the Plains. The horse actually arrived among many Native groups ahead of the Europeans. But the horse was an agent of profound cultural change.

Horses made it possible for large numbers of people to live on the Plains. Native people adopted the horse wholeheartedly. They became very adept breeders of horses, producing breeds which were improved for their own purposes. The Apaloosa is an example of that. . .

There is a need for social change in the Native communities today, but there are many pitfalls and problems involved. Native people need to adopt some new forms of doing things which provide an alternative to the federal funding system which promotes environmental exploitation of a destructive nature, and BIA paternalism. When we look into the arena of technologies, we find that the alternative grabbag is filled to the brim. There are so many technological possibilities that it staggers the mind. The choices must be made with an eye to goals, presumably the enhancement of community well-being, cultural values, and local ecology.

That horse keeps coming back to mind. It provided a new possibility for life on the Plains. One must ask, what kind of technology is needed now? What would bring to Native people the possibility of a new life on the territories they now inhabit? What would revitalize and strengthen the people now?

The focus pretty clearly needs to be local production for local consumption. A given community of people need to look at their resources with an eye to meeting their needs themselves. When we speak of technologies of food production, we must understand that the food which is produced must be intended for consumption by the group producing it. The prospects of the sale of surplus must be secondary. The same principles need to be applied to forest products, fibers, minerals. The need is to produce for ourselves with our own (or our adapted) techniques on our own territories. And we need to consider a lot of economic networking. There exists the materials on Native territories to build homes, heat those homes, grow food, and develop a wide array of locally produced products. Native communities don't need 16' combines, they need food to eat. They don't need plywood factories, they need homes. And there is a need, on a very practical level, for people to begin to think small. We should adopt a theme—small is beautiful.

A great number of Native people today are looking to the U.S. government for assistance in these problems, but there is a low level of understanding about the processes at work. People can't invoke Native sovereignty in one breath and demand that the U.S. enact its "trust responsibility" in the next. The trust responsibility of a policy which states that Native people are legal dependents of the U.S. government. A people cannot enact sovereignty when they are in fact dependent on federal dollars for their every need, from housing to education to food on the table.

All of these issues are intertwined. To develop economic self-reliance (or even economic independence), a people must exercise sovereignty. To exercise sovereignty, the Native nations must achieve economic self-reliance. To do any of these things, they must control all elements of their own lives. The true value of appropriate technology is that it can be the process (including both hardware and software) by which that control is practiced. Appropriate technology is "appropriate" to Native people only if it returns to them control over their lives. What Native people need to develop are technologies appropriate to the exercise of sovereignty. Returning to people real control over their lives must be the primary goal of Native people if they are to survive in these times. □

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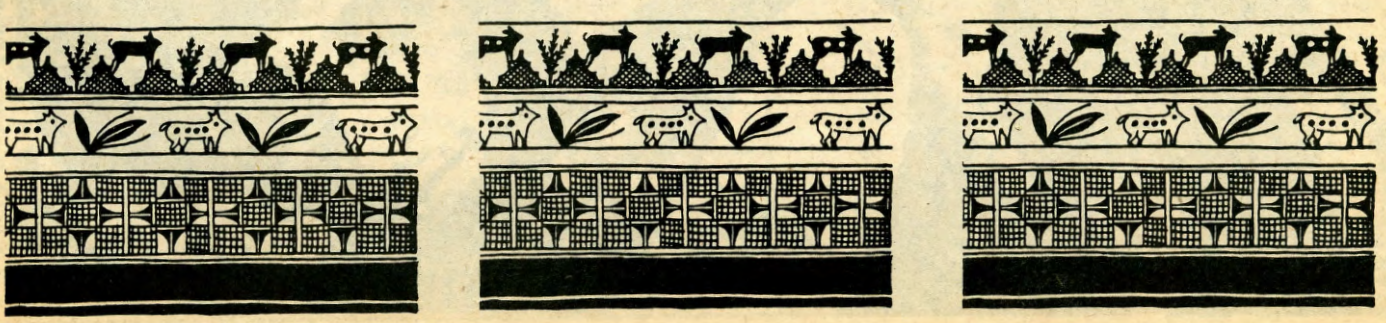


AGRICULTURE

Books about Food and Land, from:
Earthwork
3410 19th St.
San Francisco, CA 94110

The people at Earthwork continue to do good things to get the word out about food and land issues. This catalog of the materials they sell mail order also acts as a thorough bibliography on agribusiness, farming, farmworkers, nutrition and more. It's a simple, easy way to get hold of lots of helpful materials. They also sell to co-ops for resale. Check it out. —LdeM

Journal of the New Zealand Tree Crop Association, **edited by D. H. Ryde, 84 pp., bi-annual, $6/year subscription for membership from:**

New Zealand Tree Crop Assn.
Mr. D. J. Davies
Crop Research Division, D.S.I.R.
Lincoln, Canterbury,
NEW ZEALAND

A grassroots organization with regional branches shares information among its members via this journal which includes plant exchanges, recipes, bibliography and current tree information useful for tree people not only in New Zealand, since many crops suitable there are precisely those suited to the Pacific Coastal Regions. (Thanks to Peter W. Butcher, Research Assistant, NZTCA) —LS

Agribusiness Manual, **$5.00 from:**
Interfaith Center on Corporate Responsibility
Room 566
475 Riverside Drive
New York, NY 10027

A valuable adjunct to *Food First*, this collection of background papers on corporate responsibility for world hunger is heartening to see. It indicates that the churches are moving out of their band-aid/charity approach to world hunger to recognizing the causes of it and beginning to take the actions that are our responsibility. The National Council of Churches is cited in the manual as listing four root causes of hunger: unjust economic systems, inefficient food production, population growth, and patterns of consumption among the affluent. Corporations or corporate-related activity is cited as contributing to three of these four causes. Excellent background papers cover food production, commodity trade, agricultural inputs, nutrition of processed foods, U.S. farmer/consumer responses, and theological reflections and actions. Interesting data throughout—supermarkets who always voice their low profit margins (only 1-3 percent of sales) actually get 11 percent return on investment—considerably above averages for other industries. Also interesting report on church actions to require disclosure of largest 30 *voting* stockholders of corporations (not their front organizations). A valuable research/study guide for community and church groups and even you and me. —TB

BAD GUYS

The Hidden History of the Korean War, **I. F. Stone, 1952, $5.95 from:**
Monthly Review Press
62 West 14th Street
New York, NY 10011

This book exploded into my consciousness how much we can be taken in by our own propaganda, how powerfully it affects the course of the world whether we consider people to be basically good or basically evil, and how the willful acts of a single person (one of us) can (and did) cause and lead us into an unwanted war. I grew up believing the Korean War to have been a just one. No longer. Stone courageously exposed and brought together a stinging indictment of General MacArthur's successful efforts to get us into a war with Korea, and his willful attempts to expand the war into a general nuclear combat with China and Russia. Stone's long repressed picture of the Korean War and the shams behind it shines a new light on the U.S. It shows Vietnam to be not an anomaly but a repeating pattern of intervention in the affairs of others for the profit of certain American special interests. It shows a recurring weakness in our inability to support and live by the principles we propound—supporting oppressive and inhumane governments in other countries in exchange for allowing us to commit economic pillage of those countries. And it shows clearly what we need to learn and practice to be able to live with self-respect and the respect of others. —TB

from NACLA Reports in Agribusiness Manual

GOLD MINES

Five years ago there were few publications putting forth the kinds of technical information needed to help us make the changes towards right livelihood—and Rain *helped fill that need. The last few years have seen many publications spring up that are covering the details of specific areas, such as energy, with excellent articles. Here we want to give you access to the best of what we come across, and to continue this access in subsequent issues. —LS*

Energy Self-Reliance in D.C.
More than 85 percent of every energy dollar spent in Washington, D.C., is lost from the community. Like their earlier study on the community economics of MacDonald's Hamburger joints, this current study by the Institute for Local Self-Reliance has revealed a kind of trade deficit that can and does drain the economy of even the wealthiest community. The antidote in this case is simple—spend your energy dollars for conservation and solar energy, where a large percentage of the dollars can stay in the community providing jobs and income. For details, see the Nov.-Dec. '78 *Self-Reliance* ($8/year from ILSR, 1717 18th Street, N.W., Washington, DC 20009). The next phase of the study will document the potentials of those solar/conservation alternatives. —TB

Neighborhood Health Centers have proven to be a less expensive and more effective alternative to much of our traditional patterns of health care. A 28 percent drop in infant mortality rates, 50 percent reduction in the number of days children spend in hospitals, 60 percent drop in incidence of rheumatic fever in children, and a 25 percent reduction in total use of hospitals have been reported in areas served by various neighborhood health centers. In addition, those centers have provided employment and paraprofessional training for several thousand people in low-income neighborhoods. Although pressures from the traditional medical practitioners and cuts in federal funding are shutting them down, they represent a wise community investment, particularly where doctors are in short supply and/or unaffordable. Details and resources in Nov.-Dec. '78 *Self-Reliance*. —TB

Industrial Waste Recycling—Special report in Sept.-Oct. '78 *Compost Science/Land Utilization* ($15/year from Box 351, Emmaus, PA 18049). Covers industrial waste exchanges in the U.S., a survey of uses for organic industrial wastes, and replanting of mining wastes in England. —TB

"Rape—An Unusual Opinion" by Crescent Dragon Wagon. Some of the feedback from this article saw it as glorifying rape in some way. I found it a very moving (though at times chilling) account of one woman's successful attempt to turn a life-threatening and potentially emotionally crippling situation into a growth experience much in the same way we grew from the experiences of our house fire. It hurts to read these things but it is so wonderful when we can openly and courageously share such lessons with each other. Read it and the feedback with her responses in the August, 1978, and following two issues of *New Age*, $16/year ($1.75 for a single issue) from Subscriptions, P.O. Box 4921, Manchester, NH 03108. —LdeM

Annual Solar Storage
A report on existing projects and research studies for storing summer sunshine for 100 percent winter heating. The additional storage is four-fold cheaper per unit volume than collectors per unit area, and storage effectiveness improves with volume. See *Acorn*, Nov. 1978 ($6/year from Acorn/GSU, Park Forest So., IL 60466). The issue also has a good article on water conservation in Elmhurst, IL, which has cut its water use by 15 percent, increased sewage capacity by 4,800 people, and saved itself $400,000 in the bargain!

Cancer Series
Peter Barry Chowka has been keeping close watch on cancer research at the American Cancer Society and the National Cancer Institute and has done an excellent series of articles on their shenanigans. It's an important topic. Part I of "Cancer: Metaphor for Modern Times" appeared in March, 1977, Part II in April, 1977, Part III in January, 1978, Part IV in July and a piece on Mammography in the October 1978 issue of *East West Journal* ($12/year, $1.50/single issue) from P.O. Box 505, Whitinsville, MA 01588. Chowka is also a contributing editor for *New Age* and often has articles on cancer issues there as well. —LdeM

Flow of Energy Dollars — from Self-Reliance

Washington DC, excluding the U.S. Government, 1977

	Electricity	Natural Gas	Fuel Oil	Gasoline	Total
Amount Spent	$288,958,000	$77,852,914	$40,000,000	$158,791,000	$565,601,914
Amount Retained in Government Taxes	21,106,288	4,926,400	1,953,967	25,215,464	53,202,119
Amount Retained in DC Wages	6,507,513	5,902,763	453,669	7,401,268	20,265,213
Dividend	1,471,057	385,518	–	–	1,856,575
Goods & Service	1,739,600	705,000	Insignificant	Insignificant	2,444,600
Proprietors Net Income	–	–	502,967	1,306,455	1,809,422
Total Retained	31,043,872	12,060,657	2,939,931	34,126,062	80,178,522
Percent Retained	11	15	7	21	14

More On California Tenants & 13
The November/December issue of *Ways and Means* contains an update of community action and recent legislation developments proposed to equalize the benefits of Proposition 13 tax relief in that state (see also *Rain*, Dec. 1978). Contact Gary Lowe, coordinator of CHAIN (California Housing Action and Information Network), 304 S. Broadway, Suite 224, Los Angeles, CA 90013 for more information. Subscriptions to *Ways & Means* are $10/year, $20/year for institutions, from 1901 Que St., N.W., Washington, DC 20009. —LS

Small Vehicles for Transit and Transport

Not only have the low prices of land and fuels in the United States encouraged diffuse settlement of the population and heavy reliance upon automobiles and trucks to provide transit and transport, but these primary effects have in turn produced a secondary effect of relegating the bicycle and motorcycle to the position of being very nearly playthings. These smaller vehicles might have withstood the challenge of long intra- and inter-city distances in this country had it been the only factor working against them. But, as the use of the auto has been encouraged by new construction not designed for use of vehicles of lower mass and more modest speeds, bikers have been forced to constantly compete with larger motorized vehicles for road space as well.

Yet there have been forces at work, and there are forces which will continue to work to modify this scene. Not only are small automobiles and trucks becoming increasingly practical, but it is likely that some varieties of vehicles smaller than cars and with fewer wheels will also find increasing use under favorable conditions in parts of the United States. As petroleum prices rise to moderate cost by international standards, as some lanes and paths are dedicated to small vehicles, and as some steps are taken to make cities more liveable, it behooves us to look at parallel experiences in parts of Europe to see what technology is available and adaptable and to see under what conditions small vehicles for individual transit and small goods transport work well.

Small vehicles of generally elegant design are scattered here and there about Europe, in the cities and on the farms, fitting into particular niches as the local conditions dictate. While some old and heavy pedal-powered machines are roundly cursed by former users from their cars as an occasional remaining specimen rolls by, others are still in widespread use by postal services or city street and maintenance workers. An assortment of bicycles, tricycles, small trailers, mopeds and motorized carts fill a variety of transit and transport needs which lie between those served by foot and those which require four wheels and a four cylinder engine. Variations of some of these vehicles could find application in the United States, where the climate and terrain are not impediments and where several of a number of inducements are present: e.g. high fuel prices, average trips of short distance under modest load, concentrated areas of small-goods deliveries, dedication of traffic lanes to non-motorized or small vehicles, differentials in purchase prices, insurance and maintenance costs between small and large vehicles, and prohibition of or disincentives to the use of larger vehicles in sections of cities.

Living on tighter resources and in more densely populated, historically defined urban areas has given many European countries a certain kind of advantage in transitioning to the post-petroleum era. From his travels around Europe and Scandinavia, Gregg Shadduck has pulled together a stimulating overview of the use there of intermediate technology for small- scale transit and transport. While we would do well to pick up on these models, Gregg notes: "I don't think it really too healthy if people want to run off and buy these machines. Just borrow ideas and build what's needed here." Gregg can be reached at 1286 Carriage Dr., Eagan, Minnesota, 55123. —SA

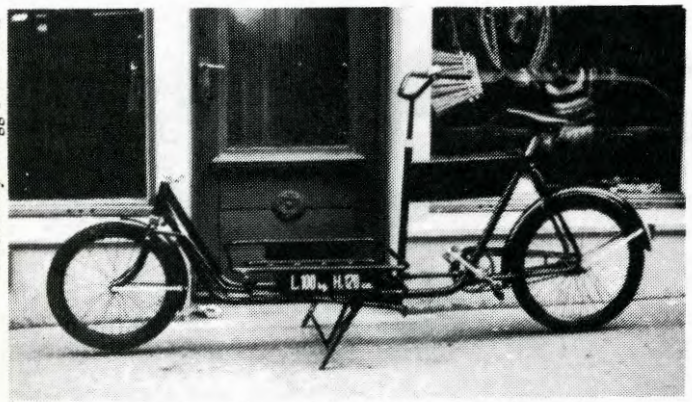
Following are descriptions of a number of small vehicles and the names and addresses of several manufacturers. The manufacturers are listed as a point of information and not with the intent of suggesting that these designs are appropriate for import or that it would be desirable to import them rather than constructing the machines locally or regionally. But a number of the machines certainly suggest designs and applications which could be adopted or modified to suit local needs.

Bicycles

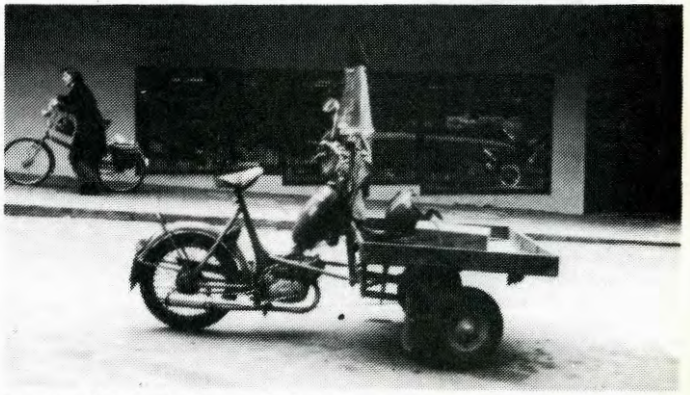
The old balloon-tire, the practical three-speed and the trendy ten-speed bicycles are familiar to nearly everyone. Not so familiar are some delivery bicycles which are able to carry anything from letters to 100kg loads of produce. Several postal services in northern Europe commonly use sturdy bicycles for neighborhood delivery of mail. These bicycles are usually step-through models with ready kick-stands and front luggage racks mounted to the frame (not to the handlebars or front axle) thereby eliminating the instability caused by a shifting load in a turn. Non-governmental versions are often used in parcel delivery and can be made in the same form, but are more often seen with double top frame tubes, forming a nice spot in which to paint the owner's name. Raleigh makes such a model available overseas, Schwinn makes a large and sturdy bike in this country, the "Short John" is familiar in Denmark (Smith & Co., Kochsgade 31, 5100 Odense), and other makes are found in other locations. The "Long John" is a more exceptional kind of delivery bicycle in which the front wheel is removed about a meter from the remainder of the bicycle and a cargo platform (100kg capacity) is interposed. The special difficulties of powering the single-speed bike have reduced it to special order status at Smith & Co., where it costs approximatey DKr 2000 or $375.

Fewer Than Four Wheels,

Photos by Gregg Shadduck



"Long John" freighter bike made by Smith & Co., Odense, Denmark.



The Swedish 3-wheel moped, the Crescent.


Jill Stapleton

Trailers for Bicycles and Mopeds

Two-wheeled trailers in any of a number of configurations can be pulled behind bicycles and mopeds. The trailers are commonly made of steel tubing with wooden or metal bottoms, but two less utilitarian American models and a Swedish design use fabric over steel tubing. The trailers require technical expertise no greater than that of a good high school shop project to build, yet sell at prices of over $100 and often nearer the equivalent of $200. The straightforward construction and high cost make good arguments for local production or for home construction from kits. Manufacturers of trailer prototypes exist all over Europe, particularly Austria and Switzerland, but also in Germany, France, Sweden and the Netherlands; they can be located in a number of European catalogues or by doing a little in-depth reference library work.

The Swiss postal service is using what is probably the ultimate bicycle-trailer combination. The sturdy bicycle is a step-through design fitted with large tires, a drum brake on the front wheel, and a three-speed rear hub with coaster brake. The trailer which it pulls is made of aluminum, divided into compartments, provided with handles so that it may be used as a push cart, and fitted with hand-actuated drum brakes. For several Swiss-made trailers, consult *Alternativ Katalog 2* (SFr 27 from BIKU, Post-fach 223, CH 3098 Köniz).

Trailers are most often secured to the towing bicycle or moped by a ball hitch, which range from simple and functional stampings from Austria to elegant castings from Switzerland under the Inca and Haerri names (ca. SFr 15-35 or $10-25, from Inca SA, La Chaux-de-Fonds or Injecta AG, 5723 Teufenthal).

Tricycles

An adult's enlarged version of the child's trike is manufactured by Schwinn and can be helpful to those who find it hard to balance a bicycle. Of more general interest are tricycles with two steering wheels forward on an articulated frame and a single driven wheel aft. The payload area between the front wheels is sufficiently large to be useful to delivery services, groundskeepers, or (in the student quarter of Leiden) to poor but energetic people who are moving their earthly goods from one residence to another. The "Monark" model is built in Sweden by Monark-Crescen AB (Kyrkog 15, 432 00 Varberg) while a larger type is reportedly still being made in the Netherlands, perhaps by De "Elephant" Fabrieken in Eindhoven.

Motorized Tricycles

The humble moped, held by law and popular opinion to be somewhere between fish and fowl, can be elevated to respectable status by replacing the front wheel with a pair of wheels with a cargo platform above them. This yields a particularly handy and versatile vehicle both for delivery work and in supporting laborers. I know of three manufacturers. There are probably more.

Monark-Crescent AB, Kyrkog 15, 432 00 Varberg, Sweden
Steyr-Daimler-Puch, Kärtner Ring 7, 1011 Vienna, Austria
N.V. "Cyrus", Rijwiel-en Motorrijielfabriek, Helbeek 28, P.B. 21, Venlo, Netherlands

These moped tricycles are elegantly suited to a tight urban landscape. Their counterparts which are suited to rural work are found in the two-wheeled tractor ("roto-tiller") conversions of Greece, in which either a cart is added behind the tractor to yield a tricycle configuration or the tractor's powerplant is added to a three-wheeled cart. The cart can then roll on down the road to or from the field and the engine can be removed to perform fieldwork. An exceptionally rugged and strong vehicle can be constructed by attaching a two-wheeled trailer with a live axle to a two-wheeled tractor. The tractor powers not only its own tires but also the rear tires through splined shafts and a gearbox. The obvious beauty of these hybrids is their adaptability in performing several agricultural chores. Less obvious is the realization that the components of the vehicles may be manufactured on a local, regional, or national scale as appropriate and that the final configuration of an individual unit can be determined by the owner and assembled locally.

The largest of the motorized tricycles are the urban trucks of Italy and Greece. They are approximately equivalent in size to the smallest of the imported pickups found in the U.S., though slower and unsuited to intercity transport. They are quite compact units, have good carrying capacity in relation to their size and weight, and with their tight turning radii are well suited to congested or narrow streets. They are real workhorses and appear with many different engine configurations.

Less Than Four Cylinders

by Gregg Shadduck


Two-wheel tractor and trailer in Greece.


Three-wheel motorized cart from which the engine and gearing assembly has been removed and is powering the two-wheeled tractor in the background. Crete.

CYCLATERAL THINKING by John E. Williams

I find it hard to believe that there could be any real controversy over cyclists' place on the roads. Perhaps I'm naive. But consider this: an average bicycle is two or so feet wide; an average car (Detroit iron, I'm talking about) is about six or seven feet wide; motor homes look to be about eight or nine feet wide; and in some states, twelve and fourteen foot wide mobile homes can be towed on freeways. Now, what are average lane widths? Depends on where you live. Narrow lanes are about nine feet. Ten feet is considered a good minimum for collector streets. Twelve is standard on arterials, and it goes up from there.

Therefore, at most a cyclist takes on the order of 22 percent of the lane width. Of course, shy distance takes up some more but let's just consider physical width. A motor home, on the other hand, may take up all of a narrow lane (9'), 100 percent.

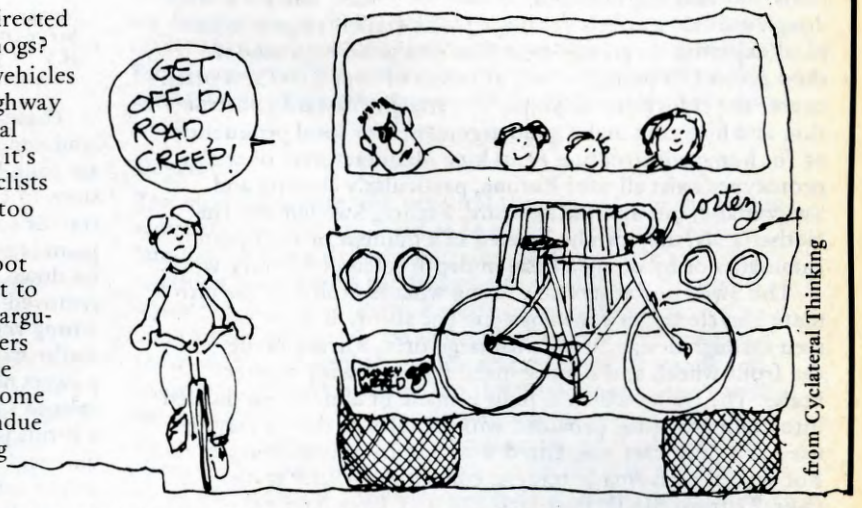
Why, then are arguments about use of traffic lanes directed at the most narrow of the vehicles and not at the road hogs? Has anyone ever thought of banning extra wide motor vehicles from those narrow scenic corridors? I'm thinking of Highway 1 in California in particular. It's a narrow winding coastal highway that is a popular cycling route. The problem is it's also a popular Winnebago route. Yet I have heard of cyclists being stopped and told to get off the road because it is too narrow and dangerous.

The reason it is too narrow and dangerous for two-foot wide vehicles and not for nine foot wide vehicles has yet to be brought out. It's politics, pure and simple. No other argument can account for the presence of 14-foot wide trailers on highways from which cyclists are banned. The mobile home industry takes care of its own. As do the motor home folks. Unfortunately, cyclists are not protected from undue regulation by a benevolent industry. We don't have a big brother. □ Reprinted by permission from *Cyclateral Thinking*.

***Cyclateral Thinking*, edited by John E. Williams, 6 pp., $5/4 issues annually, from:**

John E. Williams
Cyclateral Thinking
c/o The Bicycle Federation
P.O. Box 68
Silver Spring, MD 20907
301/587-6100

"An irreverent do-it-yourself 'journal' of cycle planning," creatively informative to anyone who's on two wheels. —LS



from Cyclateral Thinking

WHEELING ABOUT WHEELING ABOUT WHEELIN

***Boston Bikemap*, by Urban Bikeway Design Collaborative, 1978, free from:**

UBDC-USER
P.O. Box 19112
20th Street Station
Washington, DC 20036

Best map of an urban area I've seen yet, although I wish Erwin Raisz was around to hand-draw it. Check out the flip side of the map, the adventures of "Alice B. Toeclips Rides." The last panel in that comic strip refers to our blizzards of '78 when many young and not so young people were out on the stopped streets, on foot, on skis, on their own. It pointed out for many of us the advantages of a human-scaled transport (you may read that any way you like) —George Mokray, Cambridge, Massachusetts.

This wonderfully useful map includes locations of co-ops, recycling centers, museums, bike shops, train stations, and access to boat service, bus, carpools, weather info, other bike books, organizations, accident info and rules of the road! Thanks to George Mokray for sending us this terrific map! —LS

***Cycle and Recycle*, 1979 Calendar (and 1990 and 2001), 11"x17" B&W, $3.00 airmail, $4.00 airmail overseas, from:**

Greater Philadelphia Bicycle Coalition
P.O. Box 8194
Philadelphia, PA 19101

True to its name, this bike calendar will be usable three times on the way to 2001—by which time more of us will undoubtedly be out there peddling again. A cooperative, transnational edition with texts in French, Spanish and English, *Cycle and Recycle* is available to movement groups throughout the Americas as a fund-raising tool. Plenty of photos of bikers of all nations pushing for the "velorution," and an up-to-date listing of bicycle advocacy groups at home and overseas. Directory updates and other ideas for future calendars and efforts can be forwarded in any language to:

The Bicycle Network
14 Oak Street
Brattleboro, VT 05301

—SA

While we're at it, bike people everywhere should secure themselves an August 17, 1978, issue of *WIN* Magazine, which features articles and notes on the efforts of GM and other large corporations to destroy urban mass transit systems, news of the worldwide bicycle movement, training sessions for transportation activists, bicycle-drama, and goals for a viable bicycle/mass transit future. Very pithy. Single copies are available at 40¢ from:

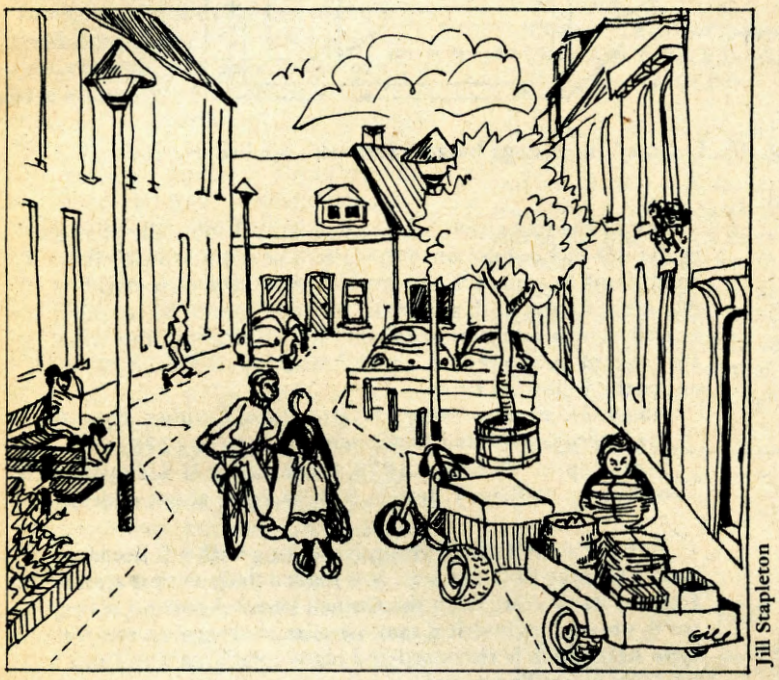
WIN
503 Atlantic Ave., 5th floor
Brooklyn, NY 11217 —SA

Seattle has begun a 6-month pilot program testing the feasibility of using bike racks on buses. Bus riding bicyclists can now load their bikes aboard buses traveling across the bridge between Seattle and Bellevue. For information, contact Metro/Bicycles, 821 Second Avenue, Seatle, WA 98104. (From *Ways and Means*, $10/year for 6 issues, $20 institutions, 1901 Que Street N.W., Washington, DC 20009.) San Diego buses also have racks (see *WIN* issue reviewed above, for more information). —LS

A WOONERFUL IDEA!

"Woonerf," Royal Dutch Touring Club, *Environmental Comment*, October 1978, $25/year, from:
ULI—the Urban Land Institute
1200 18th Street, N.W.
Washington, DC 20036

The Dutch have been conducting experiments and studies for the last five years to resolve the problem of pedestrians, bicycles and cars all using the same narrow streets for transportation. The solution was the *woonerf*, a street design which integrates the mixed uses, but still emphasizes the residential function over traffic. A special set of design standards and new traffic regulations are combined to reduce vehicle speeds. Some of the design standards for the woonerven are summarized as follows.



Jill Stapleton

- It must be primarily a residential area. It can also contain shops, schools, offices, churches and community centers as long as these are not major traffic generators.
- Through traffic should be excluded; only vehicles whose origin or destination is within the woonerf are permitted.
- There should be no division of the street into separate areas for pedestrians and vehicles.
- Breaks should occur in features at intervals of approximately 25 yards clearly indicating to motorists that the road is used like a sidewalk.
- Features must be designed to restrict severely the speed of vehicles.
- Pedestrians always have the right of way.

The conversion of an existing street to a woonerf costs one and a half times that for simple reconstruction of the roadway. However, the cost of a new woonerf need not be any higher than that of a conventional street. In both cases access for emergency and urban service vehicles must be provided. The advantages that have resulted for the inhabitants of the woonerven areas in the form of bikeways and improved residential safety suggest that this is appropriate traffic planning for some city neighborhoods. A good model for our densely populated eastern cities. Once again our feet and the bicycle can become competitive modes of transportation, thereby conserving our fossil fuels and preserving our sanity. —PC

IG WHEELING ABOUT WHEELING ABOUT WHEEL

The Clean Air Act amended in 1977 calls for states to revise their state implementation plans for areas which do not meet national ambient air quality standards. These revisions were to be submitted to EPA by January 1, 1979. Bicycle planning needs to be incorporated into these revisions as part of the transportation/air quality planning and program. For further details on strategies for bibycle planning and implementation on a state and local level, write EPA, Office of Transportation and Land Use Policy, Washington, DC 20460, for *Bicycle Strategies to Reduce Air Pollution* (Doc. EPA 400/9-78-008 June 1978) and also request more recent documents they've published this fall on the subject. —LS

Following is a list of regional EPA Bicycle coordinators to contact regarding incorporating bicycle programs and strategies into the transportation component of the state implementation plans:

EPA Regional Bicycle Coordinators

New England
Barbara Ikalainen
617/223-5630
EPA Region I
Room 2303, J.F. Kennedy Building
Boston, MA 02203

Northeast
Lou Heckman
212/264-9800
EPA Region II
Room 1005, 26 Federal Plaza
New York, NY 10007

East Central
Bill Belanger
215/597-8188
EPA Region III
Sixth and Walnut Streets
Philadelphia, PA 19106

Southeast
Ron McHenry
404/881-3043
EPA Region IV
245 Courtland Street, N.E.
Atlanta, GA 30308

Great Lakes
Phyllis Kierig
321/353-2205
EPA Region V
230 S. Dearborn
Chicago, IL 60604

South Central
Bill Taylor
214/767-2742
EPA Region VI
1201 Elm Street
Dallas, TX 75270

Central
Thomas D. Gillard
214/767-2742
EPA Region VII
Room 249, 1735 Baltimore Avenue
Kansas City, MO 64108

Rockies
Barry Levene
303/837-3711
EPA Region VIII, Suite 900
1860 Lincoln Street
Denver, CO 80203

Southwest
Steve Drew
415/556-6925
EPA Region IX
215 Fremont Street
San Francisco, CA 94105

Northwest
Lori Smith
206/442-1226
EPA Region X
1200 6th Avenue
Seattle, WA 98101

Chinagas

by Ken Smith

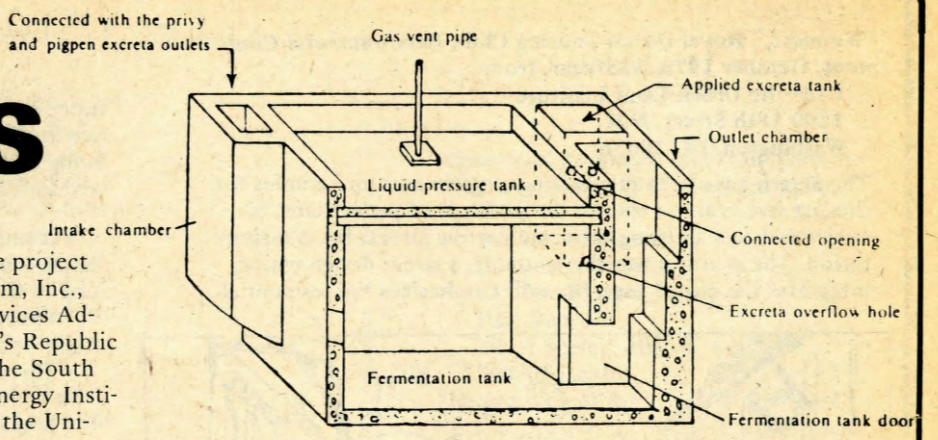


Fig. 48. Enclosed three-stage biogas plant with applied excreta tank.

I recently encountered an exciting and innovative project in the Midwest. Ted Landers of the New Life Farm, Inc., Drury, MO, has a grant from the Community Services Administration (CSA) to build several of the People's Republic of China (PRC) style digesters on rural farms in the South and Midwest. Ted is working with the Midland Energy Institute (a Kansas City based CSA organization) and the University of Missouri at Rolla.

Ted and New Life Farms have for some time been involved in digester work through the University of Missouri. They are currently conducting experiments with a 16,000 gallon digester to evaluate the use of hay and other crop-like residues as a digester feedstock.

The PRC Digester is quickly becoming a.t. jargon. It's "in" to be at least talking about building a "Chinese digester." The truth is that these are little more than septic tanks; they produce about 1/10 the gas per volume that mixed sewage treatment digesters do. They are appropriate to the Chinese situation of cheap materials and labor. At $30-$35 per cu. meter for concrete in the U.S., they may be far too expensive.

The work that Ted Landers is doing will explore different materials for construction of these digesters. He will also be doing a training program to aid local CSA organizations in developing the skills to assist low income people in the construction of these PRC type digesters after the initial prototypes have been completed.

Over 200,000 of these digesters were installed on farms in China. This was accomplished in a period of less than five years. The secret of this rapid development was a well-trained cadre of technicians who assisted local communes in the design and construction of the units.

Professor William Jewell at Cornell has for several years been working with anaerobic digestion (AD) for use on typical farms in the U.S. In 1976, the Cornell group headed by Jewell published a most extensive report on the feasibility of farm applications of AD. This report is still available through NTIS and is highly recommended for anyone who is serious about the implementation of this technology.

This report to ERDA (Now Department of Energy—DOE) details the history of the European experiences with AD immediately after WWII. It gives the usual gross estimates of the energy potential from plant and animal resources in the U.S., but it goes beyond that to describe and estimate specific energy requirements for small dairies in the U.S. (40-100 head) and feedlots of 1,000 head. The report compares energy use with that which might be obtained from AD on the farm, with projected cost for different size farm operations. The report is available:

***Bio-Conversion of Agricultural Waste for Energy Conservation and Pollution Control*, 1976, William J. Jewell, $10.00 from:**

NTIS/Dept. of Commerce
5285 Port Royal Road
Springfield, VA 22161

Jewell and the Cornell group have subsequently set out to prove the technology. A report published this year (February, 1978) details the work which has been going on for the past three years in an attempt to look very carefully at different types of reactors.

Jewell has suggested that nothing has substantially changed in the AD technology since the '30s. The work at Cornell is an attempt to approach this problem in a very systematic manner: looking both at simple, low-cost, unmixed reactors, as well as high-rate, fluidized bed filters. Details of this work are covered by the report, which is also available from NTIS under the following title:

Anaerobic Fermentation of Agricultural Residue: Potential for Improvement and Implementation (HCP/T2981-07) Final Report—February 1978. Prepared for U.S. Department of Energy, William J. Jewell, $14.50, from above address.

Currently the Cornell group is working with a full-scale, unmixed, plug-flow digester. It is loaded daily with manure from 65 dairy cows from the Cornell barns. A second reactor is a mixed, cylindrical tank (similar to sewage treatment type AD) which is also sized and loaded with manure from 65 dairy cows. The mixed tank is an experimental control as a comparison for the plug-flow unit.

The plug-flow unit is an insulated, plastic lined trench in the ground with a hypalon cover for gas storage. The unit has been in operation since late summer. Details of the results of these experiments are as yet unpublished.

A final note for this month is on the work being published by the International Development Research Centre, which is a public corporation created by the Parliament of Canada in 1970. This is the group which published the report on the Chinese digesters (*Rain*, October 1978).

The IDRC has been publishing some of the best recent reports on biogas activities in Asia and the Pacific. The most recent work which I have had a chance to review is: *Biogas Technology in the Third World*. This publication gives an update of the current reports from the East. "Biogas Systems in Asia: A Survey by S. K. Subramanian," gives an overview of the spread of the technology. There is also an excellent section on projected crop and animal yields, a comparison of different AD reactors and their yields.

IDRC publications are available in the U.S. from UNIPUB, a New York based bookstore. Both this publication and the previous publication on the Chinese digesters is available through UNIPUB::

Biogas Technology in the Third World—A Multidisciplinary View, IDRC-103e, 1978, Andrew Barnett, Leo Pyle, S. K. Subramanian, $5.00 from:

UNIPUB
Box 433
Murray Hill Station
New York, NY 10016

ENERGY

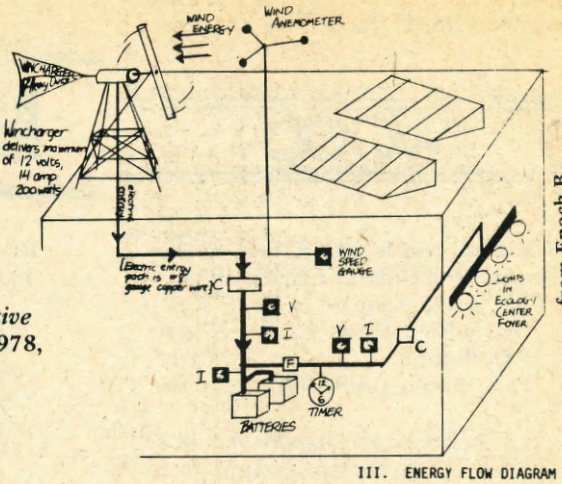
***Landscape Planning for Energy Conservation*, ed. by Gary O. Robinette, 1977, $20 from:**
Environmental Design Press
P.O. Box 2187
Reston, VA 22090

Thinking in terms of plants requires a commitment to caring and a sense of time that has been alien to our quick-'n-easy culture. We're more likely to cut down a tree and put an air conditioner in a building to keep it cool than let the tree shade the building. This is a guide for those who want to think and act differently. A compilation of most of the information presently available on the climatic impact of natural elements (landforms, vegetation and water) and site selection, planning and design for energy conservation and solar energy.

Contains also a series of case studies of relevant projects done by various architectural, landscape architectural and planning firms. Inordinately expensive for a book version of a report funded by our tax dollars, but a valuable resource for planners, architects and landscape architects. One warning—don't trust the designer's glib arrows indicating where winds will/won't go (or where they wish they would). Things ain't that exact in this field. The next edition needs photos of actual results of things like windbreaks on snow drifting, and use of plant materials on, around, and in buildings for climate control. It also should include the best graphic climate guide for designers—still the old 1951 House Beautiful/A.I.A. Climate Control Guide —which is mysteriously absent. —TB

***People's Energy: A No Nukes/Sane Energy Calendar*, $4.00 postpaid, $3.25 plus postage for 3 or more, $2.10 plus postage for 8 or more to social change groups, from:**
People's Energy/SPC
924 Burnet Ave.
Syracuse, NY 13203

The newest calendar from the Syracuse Peace Council is a collective labor of love, festival of graphics, and chockful of information on energy issues: nuclear power, energy economics, public power, powerline struggles, appropriate technology—a different subject every month. With additional contacts, readings and resources *People's Energy* is the perfect educational fundraiser for energy activist organizations. Tack one up on your wall and start the new year with the future in mind. —SA



from Epoch B

III. ENERGY FLOW DIAGRAM

Legend

V indicates Volt Meter
I indicates Current Meter
F indicates a Fuse (15 amp)
C indicates Control (off-on) Switch

The Wind speed meter represents both a direct reading with a chart paper recording device, and a Frequency of Wind Speeds compiler.

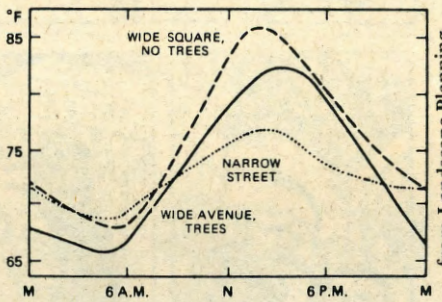
The batteries are two 6 volt, 195 amp-hr, rugged golf cart types, and are protected from discharging back thru the wind generator.

The foyer lights are four 12 volt, 18 watt sealed beam, on their own on-off switch.

The Wincharger can be remotely braked from inside the Center, in case of tornadic winds.

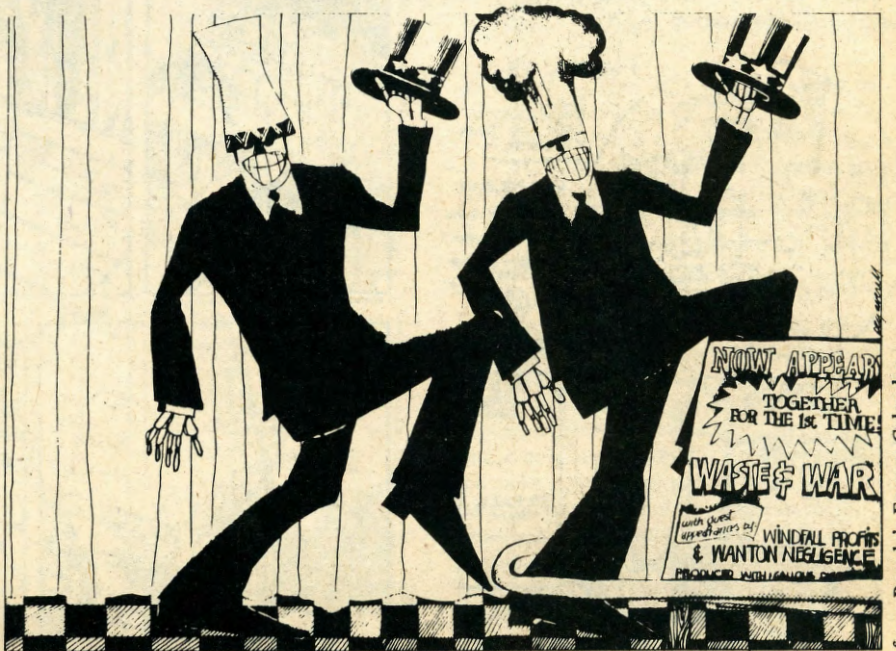
***A Community Project in Alternative Energy, Epoch B*, Janet Gillies, 1978, $3.50 from:**
Evanston Environmental Assn.
2024 McCormick Boulevard
Evanston, IL 60201

The beauty of this booklet is it shows how people can demonstrate their values and concerns in a positive, tangible form from which others can learn. The project originated with a discussion among a teacher, two housewives, the director of the local ecology center and a physics professor about ways to live compatibly with the environment in an urban society. It evolved into an alteration of the ecology center through hands-on workshops in insulation installation, space and water solar heating systems and wind generators with more than 300 individuals participating. This manual tells about that growing process and includes information on workshop organization, fund raising and program planning. Neighborhood organizations attempting similar projects can learn not only from Epoch B's successes but also from their mistakes which are freely admitted. Throughout the booklet I was constantly aware of the spirit of these people interested and involved in their community's direction. —PC



from Landscape Planning

Diurnal temperature variation in Vienna on 4-5 August 1931 for a wide square with no trees, a wide avenue with trees, and a narrow street (from Kratzer, 1956).



from People's Energy Calendar

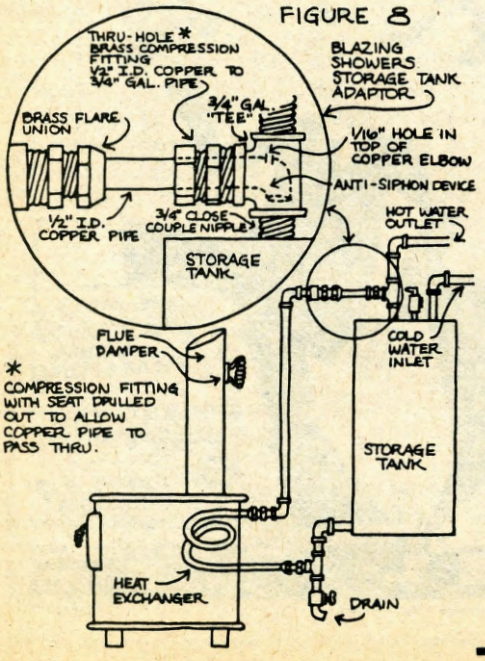
Dismantlement and Disarmament The proponents of nuclear power and weapons dance to the same music. Peg Averill

WOOD

***Handmade Hot Water Systems*, by Art Sussman and Richard Frazier, 1978, 91 pp., $4.95 postpaid from:**
Garcia River Press
P.O. Box 527
Point Arena, CA 95468

A very clear and comprehensive how-to book on design, construction and installation of alternative energy water heating systems through use of wood stove and fireplace heat in winter months and solar heat in summer months. Its clear explanations, plans and illustrations make the information useful to anyone ready to kick the habit and get off the mainline power grid with an inexpensive do-it-yourself approach. The question of rapid creosote build-up that immediately comes to mind in woodstoves is spoken to here—however we want to stress that a constant check on chimneys and stove pipe is an essential fire safety requirement when this type of system is in use. Creosote buildup can occur by the air cooling effect of water heating coils within the stove pipe causing its condensation in the interior. The only question that I'd like to see answered in this book, as my approach is definitely that of a novice, is how to combine the woodstove and solar heating components to one water heater as a storage tank, or if it's essential to have two tanks for each system. Nevertheless, it's a valuable source of information. —LS

FIGURE 8



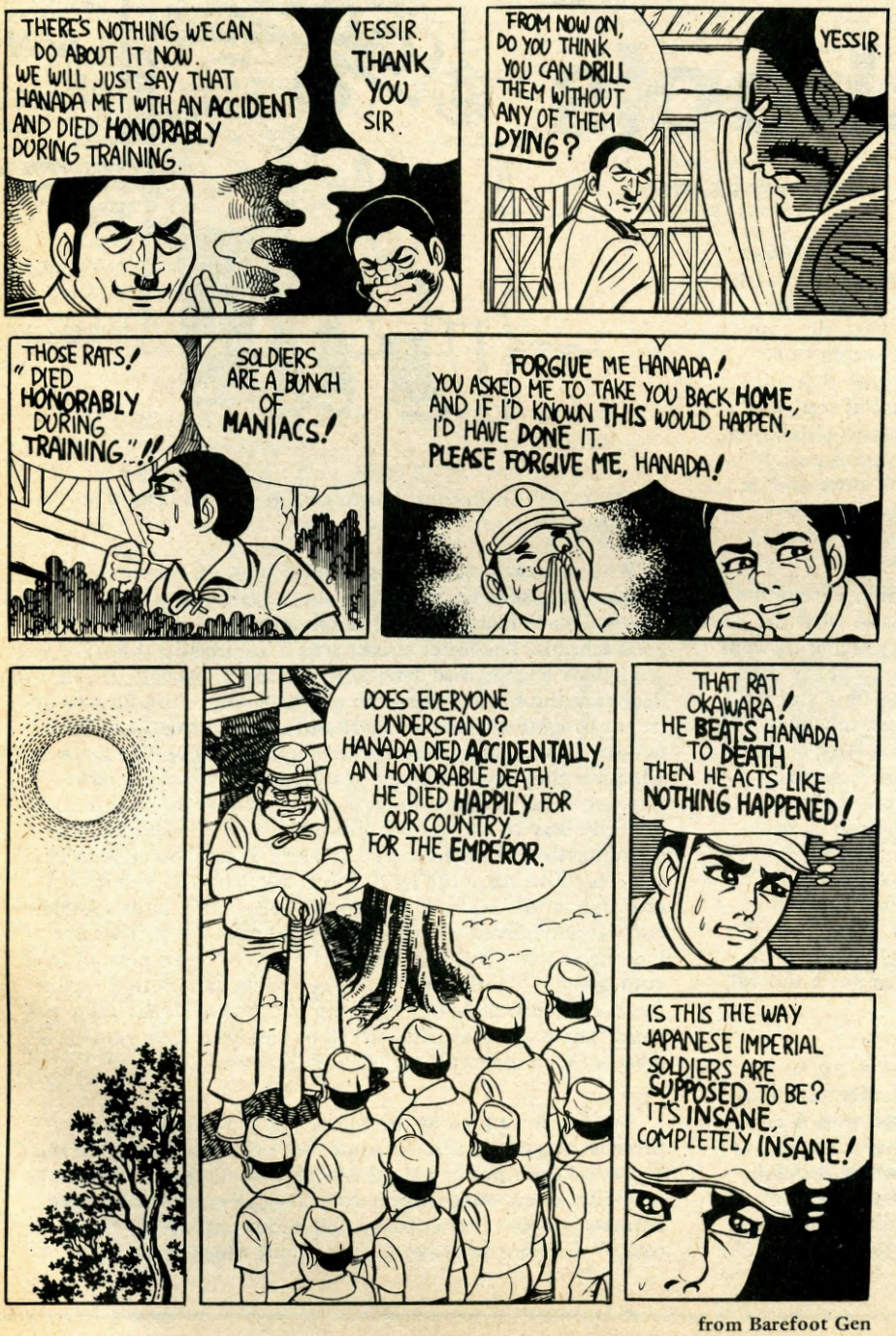
BAREFOOT GEN

***Barefoot Gen*, Keiji Nakazawa, 1978, $3.80 from:**

Jim Peck
War Resisters League
339 Lafayette St.
New York, NY 10012

We hear daily in the mass media of death. Plane crashes, mass suicides, earthquakes, war. Numbers, statistics, logistics. But never a sense of the realities beneath those glib and irrelevant surfaces. The grief, anger, heartaches, despair and heroism. The true impacts on the lives of those affected. In a touchingly powerful way, this book

of cartoons reaches and conveys those emotions and experiences. The autobiography of a Japanese boy who was 7 years old when we dropped an atomic bomb on his city of Hiroshima, it has been serialized in Japanese weekly comic magazines since the late '60s. This first volume to be translated describes the days leading up to the bombing—the hardships of civilian life in wartime Japan, the suffering of those who spoke out against the war, and the coercion and hysteria perpetrated by the government. In a time when technologies allow us to remain insulated from the effects of our actions, we need powerful reminders such as these as to what the effects really are. —TB



from Barefoot Gen

HEALTH

***Ourselves and Our Children*, Boston Women's Health Book Collective, 1978, $6.95 from:**

Random House
201 E. 50th Street
New York, NY 10022

The women who put out one of the first comprehensive books on women's health have now done one on parenting. Some of the sections include "Considering Parenting," "Sharing Parenthood," "Society's Impact on Families," and "Being Parents of Grown-Ups." It is full of the same supportive common sense and personal accounts that characterized the first book. I'm finding it warmly helpful as a prospective parent. I'm sure it would be encouraging for experienced parents as well. —LdeM

MEDIA

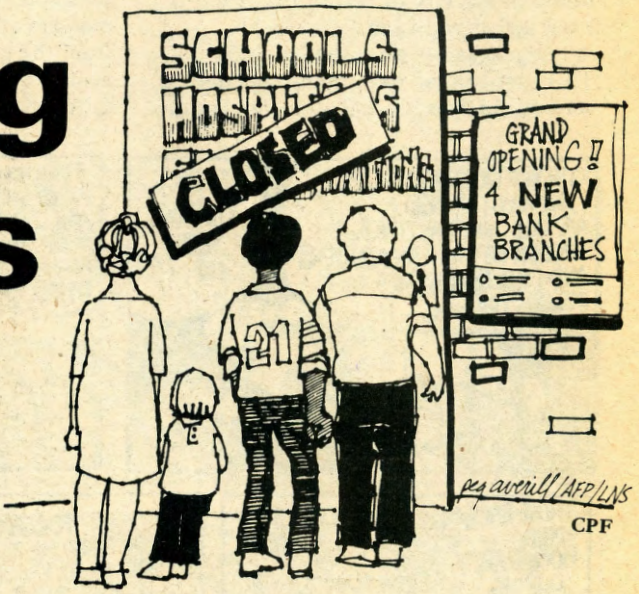
***The 6th International Video Exchange Directory*, Satellite Video Exchange Society, 1978, not for sale, contact:**

Satellite Video Exchange Society
261 Powell St.
Vancouver, BC, CANADA V6A 1G3

If you are a non-commercial video producer interested in exchanging tapes and ideas, here is a directory for you. The editor explains the philosophy behind the directory by restating ideas from *The Videosphere*, a book by Gene Youngblood, "the mass media in all its forms (print, radio, TV) is responsible for how a society develops because of the way it presents reality to the people. If people are only given bits of information about some things and none at all about others, how can they make intelligent, informed decisions?" Because the mass media controls such a large portion of the information presented, it is essential to have alternative image makers. Video provides such a tool. It allows people to create their own images of themselves and how they view the world. Names, addresses, available equipment and interest areas are listed. —PC

decentralizing the schools

by Fred Lorish



There was a great deal of concern expressed in Oregon about the future of the public schools in light of what seemed to be the imminent passage of a Proposition 13 look-alike in the election. True to form, Oregon voters rejected both the copy and a watered-down variation. But other states weren't of the same bent, and passed property tax limitations. Schools in those states are likely in the midst of a period of soul-searching. The reason is clear: property taxes are the lifeblood of the public schools. Without the taxes, the schools curl up and consolidate. Which brings me to what is the curse and, at the same time, the possibility of such tax limitations. First the bad news.

Soon after Proposition 13 passed in California, the rumors and scenarios began filtering their way north as to what the ramifications might be. One of the more odious scenarios went like this. In the wake of lost revenues from the local tax base, school districts begin to depend increasingly on state and federal monies to maintain basic programs. As more subsidies flow in, so do the restrictions and regulations. A large state and federal bureaucracy is formed to implement, maintain and police the flow of funds. Local control is eroded to the point that there is little citizen input. The bureaucracy in Sacramento becomes the "central office" for a state-wide school district. Sacramento then funnels federal money (in addition to its own) to local areas, and finds that it, too, has to deal with federal restrictions and guidelines. Soon federally mandated curriculum and administrative guidelines are instituted, and education becomes the tool of a mammoth federal bureaucracy.

This scenario has the ring of authenticity, sadly. Teachers, administrators and school boards are already witnessing an erosion of local control and individual initiative. And yet, the historical reality is that nothing could be worse for children or the schools than a top-heavy, distant bureaucracy pulling the strings. This is a scenario that can't be allowed to happen, though there are those who would clearly benefit from such a move.

The reality is that this needn't happen at all. There is another path.

With decreased access to the usual funding source, school districts are faced with a very real test: either cut back expenses drastically, or face increased state and federal incursions into local schools. The latter choice seems universally abhorred but grudgingly accepted as inevitable. If school districts choose to deal with the former, then the question centers on how to do it: cut programs? decrease staff and thus increase class size? cut out a top-heavy administrative bureaucracy? The answers, whatever they are, seem to beg the real question. For what is implicit in much educational planning is that the most cost-effective way to run the schools is through consolidation and centralization of facilities and services. If the choice is to cut services or decrease the work force, the schools are left overcrowded, under-staffed, and poorly supplied . . . but somehow cost effective. And what has really happened is that we are looking at schools and students in terms of "cost per full-time equivalency," "unit cost," etc.—economic jargon that quantifies the effectiveness of education in terms of dollar value per child. The *quality* of educational process and environment is given a much lower priority rating, if considered at all.

But when we look at the "state" of the public schools, there is certainly much evidence that calls the efficacy of the bigger-is-better public school model into question. The tax revolt argument that schools are too expensive is absolutely correct; it is just that cutting back and returning to "the basics" does not improve the quality of education.

GOOD THINGS

Ski Trails & Old Timers' Tales in Idaho and Montana, Ron Watters, 1978, 272 pp., $7.95 from:
Solstice Press
North Country Book Express
Box 9223
Moscow, ID 83843

I like the headspace of this ski-touring resource book: it has a well-honed sense of place, a nice appreciation for local folklore centered around the "long snowshoe," and a commitment to sport that is integrated with environment. 300 trails in the northern Rockies are mapped out by sub-regions with aerial illustrations and notes on terrain, degrees of difficulty and avalanche dangers. In all, a well-rounded guide to touring the powdery pleasures of Big Sky country. Nice job, Ron. —SA

New Western Energy Show Film, $40 rental or $475 purchase from:
N.W.E.S.
226 Power Block
Helena, MT 59601

I know we plug these guys a lot, but if you can see this film, you'll know why! Wonderful singing and dancing theater put on in towns around Montana. There's no better way I can think of to teach about energy use and the potentials of the good life. This film captures the spirit of the group and its show so well that you'll smile all the way through it. See the October 1977 (Vol. IV, No. 1) issue of *Rain* if you want more info on the show. —LdeM

*NWES is recruiting 3 actors and actresses for next summer's tour, so here's a great opportunity to plug in. (See RUSH for more details.)

Further, when we begin to view the schools in terms of the kids and their community, we get a different perspective. You can't help but wonder how much a child *really* gains from the plethora of "services," equipment, materials, et al., that come from centralized services. If a teacher is trapped with lesson plans, secretarial work, building curriculum plans, district goals and objectives, workshops, in-services, state and federally imposed paperwork, etc., etc., how much is left for the kids? Where is the give and take, the love, the spontaneity, the random nature of learning? The kids find themselves in situations where their curiosity, integrity and wisdom are often questioned; their choices are severely limited; their learning restrained and not organic. There is much missing for them.

Frankly, there is not only much missing for children, but much also for parents and teachers. It seems clear that further centralization of the schools can only heighten the loss. Cutting back the present configuration of the schools will likewise alienate child, parent and teachers. The only choice that remains is to begin the process of decentralizing the schools. My sense is that were parents and teachers to look closely at decentralized, locally controlled, and small schools, that many of the problems facing the schools could be resolved. What I have come to believe about schools can be summarized in six points:

* A small, decentralized school controlled by parents and supported by some equitable distribution of tax and other monies will be more cost-effective than the same school in a centralized school district, while being better able to provide truly quality-oriented learning experiences.

* Such a school cannot only provide a more than adequate environment for learning, but can also be more responsive to the needs of the community it serves.

* A parent committee controlling a small school can be more efficient and effective than a school board lording over its feudal domain of schools.

* A small, decentralized school can be more responsive to the rich cultural diversity of the larger community; or it can better preserve, maintain and encourage cultural and ethnic diversity and identity.

* A small, decentralized school can engender the values needed to sustain a harmonious relationship with the processes that support life.

* A small, decentralized school can foster an aesthetic and qualitative awareness of life processes.

These six points are in need of further clarification, and I plan to devote considerable time in the next year to them. I see this as a beginning, and would welcome the feedback of readers. But what I really hope is that there is a small, vocal group of parents out there who have already seen the need for decentralization of the schools. If you are there, please let us know your whereabouts. That work is a right livelihood, and needs to be supported in whatever way possible. □

On January 22-28, 1979, the Huxley Environmental Reference Bureau will be holding an Endangered Species week to be held at Western Washington University in Bellingham, WA. There will be a variety of speakers, workshops, exhibits, et. It will also be a chance for people interested in endangered species to get together and share ideas. Contact: Joseph S. Lyles, HERB, Western Washington State College, Bellingham, Washington 98225.

The Huxley Environmental Reference Bureau is compiling a list of people who will publicly speak on environmentally related subjects. Prospective speakers should provide the Bureau with name, address and phone number, topics you would speak on, fees if any, and a brief biographical sketch. Please send the information to HERB, c/o Charlette MacCay, Environmental Studies Building Room 535, Western Washington University, Bellingham, WA 98225, or call 206/676-3974.

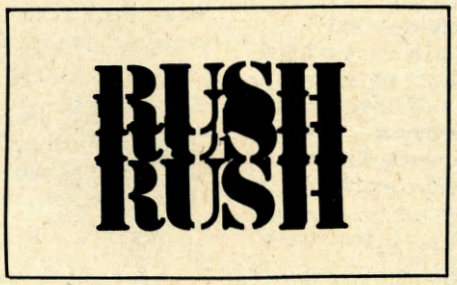
The Conference on Alternative State and Local Public Policies is now accepting applications for spring semester full and part-time internships. Interns will do research, help staff organize seminars and conferences, and provide administrative support on such issues as state and local tax reform, energy, women's economic issues, low income housing and neighborhood issues, etc. Contact: Patrice Gallagher, Conference on Alternative State and Local Public Policies, 1901 Q Street N.W., Washington, DC 20009, or call 202/234-9382.

The New Mexico Solar Energy Association (NMSEA) is sponsoring a grassroots symposium at the 3rd National Passive Solar Energy Conference, January 10, 1979. The conference is being held in San Jose, CA, and the symposium will be in San Jose or San Francisco. The $10.00 fee is negotiable. Contact Anne Cicero, NMSEA, P.O. Box 2004, Santa Fe, NM 87501, 505/983-1006.

The New School for Democratic Management presents Community Business Training Evening Session, January 16 to March 21, in San Francisco. Courses include: Starting a Business, Bookkeeping, Democratic Management and Organizational Growth, etc. The courses are designed for people involved with women's enterprises, appropriate technology producers, worker owned businesses, etc. Contact: New School of Democratic Management, 589 Howard St., San Francisco, CA 94108, or call 415/543-7973.

The Farallones Institute's Rural Center announces its 1979 hands-on residential and weekend workshop schedule. Residential workshops include whole life systems, solar greenhouses, solar hot water heating, solar construction, the meaning of Right Livelihood, and the French Intensive Method of gardening. For complete information send a 9x12 self-addressed envelope with 45¢ postage to: Rural Center, 15290 Coleman Valley Rd., Occidental, CA 95465.

March 2, 3, 4 are the dates for Santa Clara County Office of Appropriate Technology's conference on "Meeting Human Needs: The Economic & Political Context of Self-Determination, Decentralization and Appropriate Technology" at San Jose State University. Friday eve: a discussion of food, health, housing and work problems within local communities; Saturday: small task groups to strategize solutions to those problems at the conference and beyond; Sunday: topical and skills workshops on community credit unions, economics of small farming, urban strategies and reform, neighborhood health centers and community development. Preregistration is suggested. Contact Richard Wenn or Michael Hibbard at SCOAT, P.O. Box 5651, San Jose, CA 95150, (408) 277-3132.



Corrections:

- In the October "Gas Works," Ken Smith mentioned that a one cubic meter digester could provide cooking gas for a family of five. It should have said a *ten* cubic meter digester or a family of very, very small people).
- The graphic in the same article, showing flow of sunlight through bioconversion processes, was originally done by Jeff Barnes of Bear Creek Thunder, Ashland, Oregon.
- In Bill Day's November listing of add-on wood furnace units the *Woodmaster* manufactured by Suburban Mfg. Co. was inadvertently incinerated by our typesetting into *Woodwaster*. Oops!

The Institute, a national center for training and research in community organizing, is conducting a number of workshops during the month of January. They are: "Alternative Careers: Community Organizing" on Jan. 14, Austin, Texas; "Community Organizing: An Overview on Jan. 16, also in Austin; and on Jan. 29-30, "Grassroots Fundraising," which will take place in New Orleans. Contact: Lina Newheuser, The Institute, 523 W. 15th St., Little Rock, AR 72202, or call 501/376-2615.

The Conference on Alternative State and Local Policies is sponsoring a conference on "New Directions in Farm, Land, and Food Policies: A Time for State and Local Action" to be held in Nashville, Tennessee, Jan. 12-14. The conference's aim is to stimulate and broaden efforts to change agricultural and food policy at the state and local levels. Contact the Agricultural Project, Conference on Alternative State and Local Policies, 1901 "Que" St. N.W., Washington, DC 20009.

Northwest Alternative Energy Fair will be held at Gray's Harbor Fairgrounds in Elma, Washington (home of Satsop nuclear power plant—40 mi. west of Olympia). Sponsored by the Gray's Harbor Crabshell on May 4 & 5. Contact them at 110 Pioneer, Montesano, WA 98541, if you're interested in exhibiting, conducting a workshop, or helping them coordinate the event and spread the word.

JOBS

New Western Energy Show (see review, p. 21) needs 3 Renewable Energy Technicians for the 1979 season. Tasks will be design of displays, maintenance of vehicles and displays (like wind generators), information gathering, and leading workshops in renewable energy areas. Carpentry, plumbing, metal working and design skills are necessary. Salary is $500-$600/mo. from February to September. Contact David Nimick, NWES, 226 Power Block, Helena, MT 59601, 406/443-7272.

NWES also needs actors and actresses to teach children about renewable energy through models, games, talks, dramatics. $575/mo. from Feb. to May (possibly Sept.). Contact Shaun Taylor or Maggie Konet, NWES, at the above address.

RAIN PUBLICATIONS

NEW

☐ ***Stepping Stones: Appropriate Technology and Beyond*, edited by Lane deMoll and Gigi Coe, 208 pp., Fall 1978, $7.95.** A valuable reader providing the philosophical glue and background of what appropriate technology is. Compilation of classic essays by Schumacher, Odum, Lovins, etc., as well as new visions of what may lie beyond by David Morris, Margaret Mead, Tom Bender, Gil Friend and Lee Johnson.

☐ ***Stepping Stones Poster*, by Diane Schatz, approx. 22"x 33", $3.** This incredible new vision landscapes a community combining rural and urban views of Ecotopia. It was designed for the cover of our new book, *Stepping Stones*, to illustrate some possibilities for beyond. The detail in the poster is great.

☐ ***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.

☐ ***Urban Ecotopia Poster*, by Diane Schatz, 22"x33", $3.** A reprint of the "Visions of Ecotopia" line drawing that appeared in the April '76 poster issue. Great for coloring.

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

☐ ***Emerging Energy Policy Principles*, by Tom Bender, August 1974, $1.**

☐ **Cosmic Economics, by Joel Schatz and Tom Bender, revised revised March 1974, $1.**
Principles to be carefully remembered in wending our way through this transition, and outlines for the simplest and most effective economic mechanism we've seen for guiding that transition.

NEW

☐ ***RAINDEX*, by Lane deMoll and Linda Sawaya, 1979, 48 pp., $4.00.** A librarian's delight: a complete index to Volumes I through IV (October 1974 through Aug/Sept 1978) of *Rain, Journal of Appropriate Technology* and *Rainbook, Resources for Appropriate Technology*, all in one mammoth volume which includes a four-page issue-by-issue listing of what's inside. Bound and printed in *Rain* magazine format, *Raindex* is a wonderful addition to your back issues of *Rain* or a great means to discover the magic that hides therein.

☐ ***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."

☐ ***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.

Back Issues Available, $1 each. List those desired:
Vol. I, Nos. 7, 8, 9; Vol. II, all 9 issues (Vol. II, No. 6 was a poster issue; Vol. II, No. 9 was a special issue on Northwest Habitat.); Vol. III, all 10 issues; Vol. IV, all 10 issues; (Vol. IV, No. 2 was a special issue guest edited by the California Office of Appropriate Technology.).

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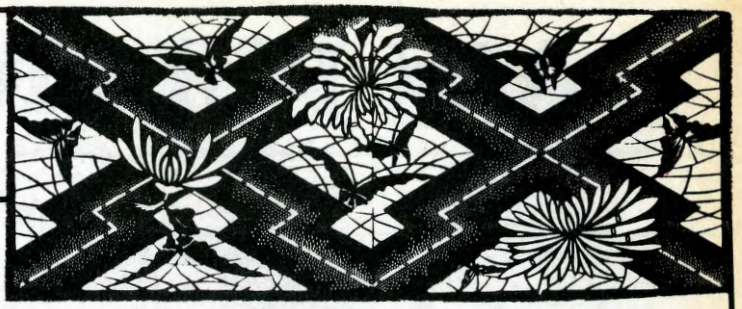

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