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APPROPRIATE ENERGY TECHNOLOGY LIBRARY BIBLIOGRAPHY

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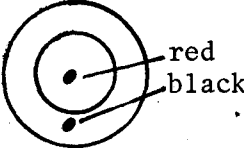
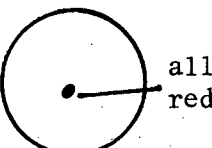
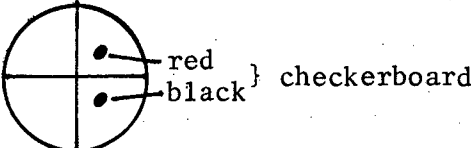
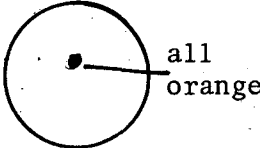
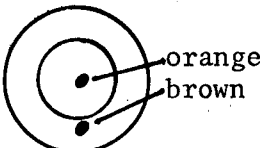
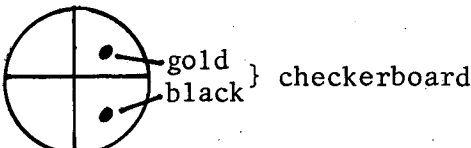
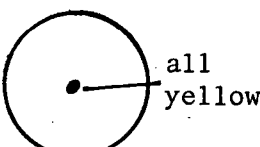
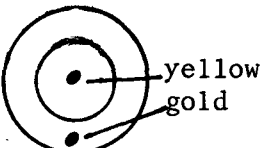


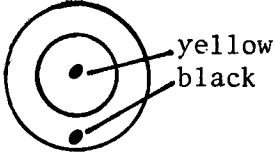
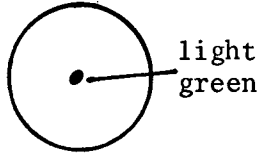
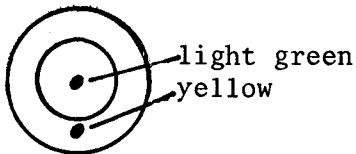
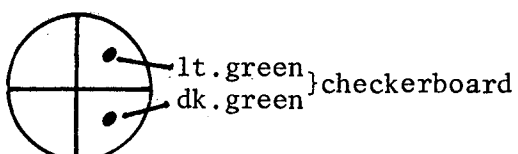
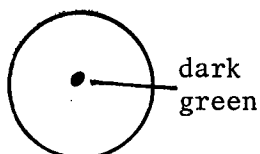
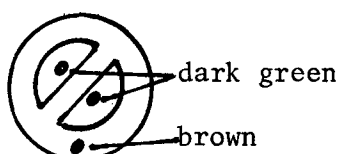
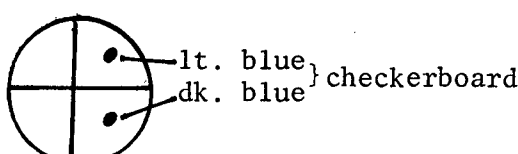
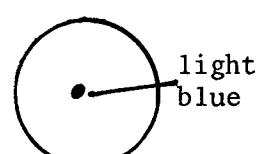
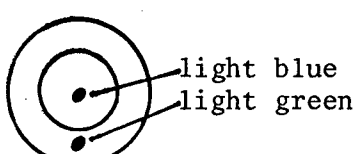
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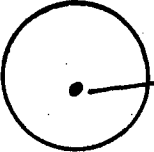
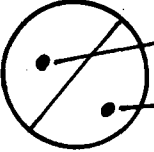
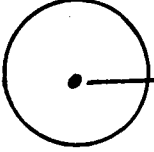
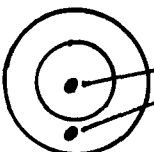
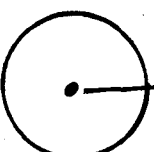
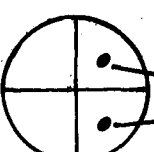
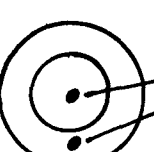
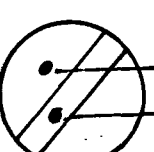
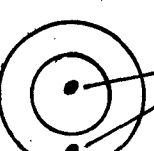
"The strength of the earth is my strength;
The thoughts of the earth are my thoughts;
The voice of the earth is my voice."

SONG OF THE EARTH SPIRIT, p.122

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INTRODUCTION

The LBL Appropriate Energy Technology Library

The Lawrence Berkeley Laboratory (LBL) entered the small scale technology field as a technical assistant to the Department of Energy (DOE) in setting up the pilot phase of the Appropriate Energy Technology (AET) Small Grants Awards Program in Region IX in 1977-78.

LBL soon discovered the need for a library of books dealing with technologies on a smaller scale than that of customary projects and books that would introduce researchers to the inventive and ecology-conscious thinking in its various social and cultural milieus that lies behind the drive for local self-reliance, parent to the small scale solution or invention.

Unfortunately, self-reliance and self-sufficiency have acquired connotations of rural isolationism that frighten many city-lovers. The authors in the AET library deny that there is any such correlation. Great and exciting cities existed in the days of the candle and the horse and buggy; they will continue to exist in the days of the solar collector and biomass fuels.

However, with a return to self-reliance must come a change in the definition of "quality of life" both in-city and elsewhere. The authors argue that too often the business of living has become, for many Americans, living for business. The average American is apt to recognize "quality of life" by how little (s)he must do for how much (s)he can get (in dollars).

Self-reliance almost forces the individual to appreciate and enjoy the process of using his or her own *varied* skills for its own sake and, consequently, to respect the skills of others. Self-reliance requires a more personal interchange with nature and opens avenues of more direct and immediate satisfactions, that bypass the money route.

"Living for business", which involves the sense of owning the earth, becomes the "business of living" or being *of* the earth, even in the city. Thus, "quality of life" must prove to be a new appreciation of ourselves, respect for the very existence of the phenomenon of life, and a determination to preserve life in every form. For the authors are of one mind that life cannot endure without being a creative process, an interaction with the earth and her natural cycles that does not denude or damage but enriches both ourselves *and*, as the American Indians know her, *Mother Earth*.

Robert Frost understood the different attitudes and feelings, the callousness or the love that can exist in people toward the earth. In a poem called "The Gift Outright," he analyzes an aspect of early American History, saying that as colonizers on, what was to them, foreign soil:

"The earth was ours before we were the earth's."

Frost continued his examination of what he saw as a problem in owning rather than loving the earth, giving the solution which he felt early

Americans finally discovered, at least as a nation:

*"Something we were withholding made us weak
Until we found out that it was ourselves
We were withholding from our land of living,
And forthwith found salvation in surrender."* (See p.63)

The average American gets little opportunity to react with the earth except on vacation. Perhaps this "withholding" can be corrected by backyard gardens, compost toilets, and a closer and more direct reliance on the sun and the wind. Feeling at one with our planet, we may yet choose to nurture her, to enter upon a symbiotic relationship with her rather than a parasitic one. So the AET authors hope.

The most comprehensive summary of the hopes of the authors in the AET library lies in Rene Dubos's definition of the symbiotic relationship, found in *THE JOURNAL OF THE NEW ALCHEMISTS*, p.117:

"Symbiotic relationships mean creative partnerships. The earth is to be seen as neither an ecosystem to be preserved unchanged nor a quarry to be exploited for selfish and short-range economic reasons, but as a garden to be cultivated for the development of its potentialities of the human adventure. The goal of this relationship is not the maintenance of the new status quo, but the emergence of new phenomena and new values. Millennia of experience show that by entering into a symbiotic relationship with nature, humankind can invent and generate futures not predictable from the deterministic order of things and thus can engage in a continuous process of creation."

The Browsing System

The Appropriate Energy Technology Library not only provides information for researchers and students but, for many borrowers, serves as an in-depth introduction to the subject of alternative technologies. The Dewey Decimal System as a categorizer proved meaningless for these purposes, thus the need for a system more "appropriate."

The unique *Browsing System* is keyed by a rainbow progression of colors identifying categories that are as paradoxical as the word "appropriate" and, probably for that reason, is more accurate and usable than a number system could be for this library. Within the seven rainbow colors are different shades and designs to make the system expandable without adding complications. Borrowers find the colored-dot identification of interest areas easy to use. They need not worry about replacing books in exact numerical or alphabetical nooks. For example, they put the red-dotted book with the red dots. Because red is the first color of the rainbow, the red dots are at the beginning of the shelves. The part-time librarian has yet to find a book out of place! Also, she can rapidly scan a new book and place it into the system with ease.

The dots, diagrammed in the Table of Contents, are used both on the rib of each book and on its index card in the catalogue. One true incident should

serve to illustrate the convenience and value of the unusual system. A student from the Berkeley Campus of the University of California came to borrow books for a report on the philosophical and political consciousness and/or ramifications of alternative technologies. He had found the normal library system impossible to use because the books were so dispersed.

The AET library books were crated, at the time, to be moved to new quarters. However, the librarian opened the box with the yellow dots and assured the student that if what he needed was not there, he could move on to the light green or back to the gold and orange, depending upon the emphasis he wanted in his report. About ten books with yellow dots was all he needed for his paper.

Incidentally, the yellow dot area of the library is growing so rapidly that three different emphases are beginning to show. One is on history (e.g., *Scientific American's CITIES*); one is on philosophy (e.g., E.F. Schumacher's *SMALL IS BEAUTIFUL*); and a third expresses opinion through story-telling (e.g., Edward Abbey's *THE MONKEY WRENCH GANG*). By the rules of the system, they will all remain yellow, but the designs can differ. The history can be checkerboard and the story-telling, half-pie, for example. However, it is important to remember that the needs of the user are more important than ingenious and detailed categorizing. There is much unexpected overlapping in AET material. Even the catalogues read like philosophy books sometimes; some have fiction in them.

The Bibliography

This bibliography retains the shelf order of the *Browsing System* but must be printed without the colors. In place of color, illustrations hint at the "category" of subject matter on each page. The Table of Contents attempts to define the elusive categories by words and may help locate books. Another method of discovering a book on a special subject is to use the Index of Titles and Authors. If a book with which the reader is already familiar is in the library, it will be in the bibliography among similar books. The Index will give one page number; try a page or two each side of the given page, as well.

Also included among the pages dealing with each interest area is a list of publications that have chapters or sections dealing with that interest. These lists have proven useful to people who are hunting for some specific technique or fact.

The decision to lard the pages with quotations instead of reviews was rooted in the desire to stimulate curiosity in the subject field, to give a better flavor of each book than a mere list could do, and, incidentally, to hide the fact that the bibliographer has not read *all* the books yet, to review them!

Griefs and Gratitude

During the process of building the library, setting up the *Browsing System*, and trying to put together the bibliography, fully half of the books were scattered around, in service, as they are meant to be. This explanation is by way of excuse for missing or mis-information, such as no quote used from a text or missing information about the numbers of pages a book has.

Incomplete entry may be a compliment to a book's readability or usefulness!

The bibliographer is extremely grateful to the Public Relations and Technical Information Departments here at LBL for their invaluable guidance. However, their good advice sometimes fell on, what Yankee grandparents call, "ears that lap over." In other words, the generous sprinkling of old fashioned, homemade mistakes are her very own contribution, no one else's.

Nevertheless, in a world in which there is so much destruction, all of us in the AET group hope that this bibliography of small scale solutions to what often appear overpowering problems will help rekindle faith in the human spirit in all its abundant creativeness and inherent respect, when undistorted, for the dignity of the earth and the life forms thereon.

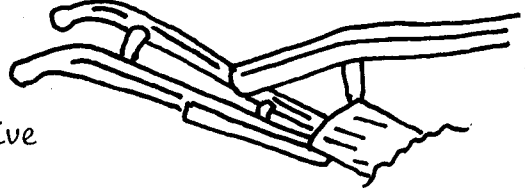
H.R.C.
August 1979

● This work has been supported by the Building and
● Community Systems Division, Office of Conservation ●
and Solar Applications, U.S. Department of Energy.

"Riding lawn mowers are the final absurdity. Though a man trying to cut his lawn can avoid exercise, pollute the area, and feel like John Wayne, all at the same time, riding mowers have all the problems of other mowers on a more complex scale." *HOW THINGS DON'T WORK*, p.24

"The press is designed around an ordinary automobile bumper jack... The idea is to bruise, if possible, every cell in the fruit. The better the chopping, the greater the yield of juice."
BUILD IT BETTER YOURSELF, pp.326-327

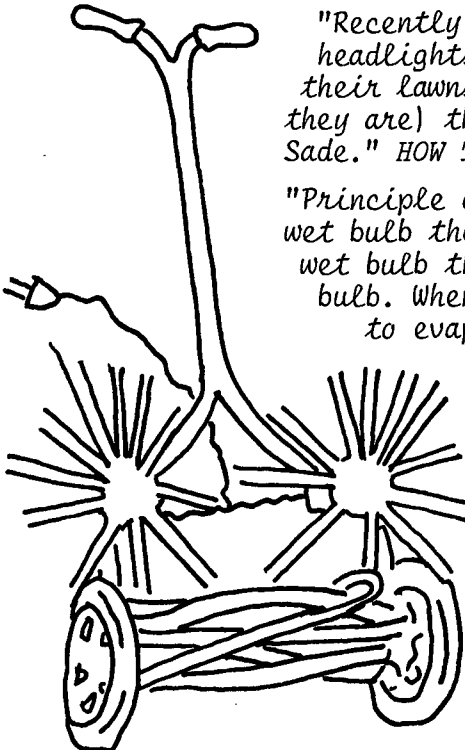
"You will be your most important employee. It is more important that you rate yourself than it is that you rate any prospective employee." *INVENTOR'S HANDBOOK*, p.157



- *INVENTOR'S HANDBOOK* by Terence Fenner & James Everett, 1969 (Chemical Publishing Co., Inc., New York, N.Y.) 309 pages.
- *BUILD IT BETTER YOURSELF* by the editors of *Organic Gardening and Farming*, William H. Hylton, Ed., 1977 (Rodale Press, Emmaus, Pa.) 942 pages.
- *THE WAY THINGS WORK* "An illustrated Encyclopedia of Technology," C. van Amerongen, M.Sc., A.M.I.C.E., trans. from German, in two volumes, 1967 & 1971 (Simon & Schuster, New York, N.Y.) V.I, 590 pages & V.II, 591 pages.
- *HOW THINGS DON'T WORK* by Victor Papanek & James Hennessey, 1977 (Pantheon Books, New York, N.Y.) 154 pages.
- *PICTORIAL HANDBOOK OF TECHNICAL DEVICES* by Paul Grafstein & Otto Schwarz, 1971 (Chemical Publishing Co., New York, N.Y.) 607 pages.

"Recently Popular Science magazine suggested putting headlights on a lawn mower so that people could cut their lawns at night - a thought (considering how noisy they are) that would give pleasure to the late Marquis de Sade." *HOW THINGS DON'T WORK*, p.24

"Principle of the sling psychrometer. The dry bulb and wet bulb thermometers are regular thermometers, but the wet bulb thermometer has a moist cloth surrounding the bulb. When whirling it, the wet bulb will read less due to evaporation." *PICTORIAL HANDBOOK OF TECHNICAL DEVICES*, p.510



"Although the plow is one of the oldest agricultural implements, it has changed very little in shape and construction over the years. Only the plough tails (handles) have lost their significance in modern tractor-drawn ploughs. The coulter, attached to the plough-beam, makes a vertical cut in the ground. The ploughshare coming behind it determines the depth of the furrow. It cuts the soil horizontally and lifts it to the mould-board, which

turns it over." *THE WAY THINGS WORK*, V.I, p.430

"The fuel-and-air mixture for the cylinders of a multi-cylinder engine is usually supplied by only one carburetor. A relatively narrow, long, and often bent or curved inlet pipe connects the carburetor to each cylinder. This shape is unfavorable from the point of view of gas flow... The greatest gain in performance is achieved when each cylinder is provided with its own individual carburetor." *THE WAY THINGS WORK*, V.II, p.308

"We seem to be placing our hope for a warm future more and more in provident technological breakthroughs, such as fusion and solar power, in other words, in the technological cavalry's riding over the hill in the nick of time. The hidden crisis of today is a crisis of attitudes and institutions rather than of energy shortages and higher prices." *MAN, ENERGY, SOCIETY*, p.443

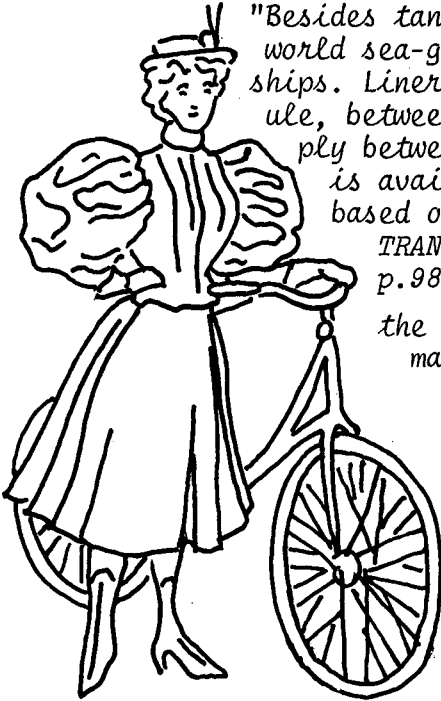
"In my view, all the above once again confirms the utter futility of attempting to achieve national security through military technology alone. We must look elsewhere." *MILITARY TECHNOLOGY AND NATIONAL SECURITY*, p.14



"It has been found that some types of gasoline burn very rapidly in engine cylinders and thus knock very badly... Gasoline is rated according to how easily it will knock, that is, by its antiknock value. The...ONR (octane number rating)." *AUTOMOTIVE ENGINE DESIGN*, p.118

- *AUTOMOTIVE ENGINE DESIGN* by William Crouse, 1970 (McGraw-Hill Book Co., New York, N.Y.) 376 pages.
- *TRANSPORT MODES AND TECHNOLOGIES FOR DEVELOPMENT* by the Department of Economic and Social Affairs, 1970 (United Nations, New York, N.Y.) 147 pages.
- *MILITARY TECHNOLOGY AND NATIONAL SECURITY* "The ABM debate is analyzed in the context of a larger dilemma: the futility of searching for technological solutions to what is essentially a political problem" by Herbert F. York, 1969 (A *Scientific American* offprint, V.221, No.2; W.H. Freeman & Co., San Francisco, Ca.) pages 17-29.
- *THE ROLE OF SCIENCE AND TECHNOLOGY IN REDUCING THE IMPACT OF NATURAL DISASTERS ON MANKIND*, Report of the Advisory Committee on the Application of Science and Technology to Development by the Department of Economic and Social Affairs, 1972 (United Nations, New York, N.Y.) 35 pages.

For more reading material in subjects covered here in pages 1-3, see chapters in: *ALTERNATIVE SOURCES OF ENERGY*; *MAN, ENERGY & SOCIETY*; *SOFT-TECH*; *INTRODUCTION TO APPROPRIATE TECHNOLOGY*; *PROGRESS AS IF SURVIVAL MATTERED*; *THE MOTHER EARTH NEWS NO.36*; *OUR SYNTHETIC ENVIRONMENT*; *ENERGY WE CAN LIVE WITH*; *SCIENTIFIC TECHNOLOGY & SOCIAL CHANGE*; *ENERGY FOR SURVIVAL*; *RAINBOOK*; *APPROPRIATE TECHNOLOGY SOURCEBOOK*; and *LIKLIK BUK*.



"Besides tankers and other specialized bulk carriers, the world sea-going merchant fleet consists of liners and tramp ships. Liners sail regularly on a published route and schedule, between specified ports. Trampers, on the other hand, ply between ports wherever and whenever profitable cargo is available, with no specific route or fixed schedule based on expectations in advance of actual demand."

TRANSPORT MODES AND TECHNOLOGIES FOR DEVELOPMENT,

p.98 "Lack of suitable codes or failure to enforce the codes has been a major contributing factor in many disasters." ROLE OF SCIENCE AND TECHNOLOGY IN REDUCING THE IMPACT OF NATURAL DISASTERS ON MANKIND, p.12

"Instead of trying to achieve the impossible, i.e., force the natural system into the technological mold, the technological mold must be fitted back into the biological system. The contest is not whether we can create synthetic gas, but whether we can decentralize agriculture and recycle resources." ENERGY FOR SURVIVAL, p.465

"An intriguing form of bicycle transportation, once very popular in America, is the railbike. Very simply, the railbike is a regular bike fitted with special attachments so that it can be ridden on rails." PEDAL POWER, p.119

"Technology and science are not problems by themselves - only the value systems and myths which determine how we use them. We need a recycling assistant to cultural, spiritual and intellectual change - not a wasteful and

- BLIND FAITH IN THE OMNIPOTENCE OF TECHNOLOGY by Richard Merrill, 1970 (Ecology Center Reprint, Berkeley, Ca.) 5 pages.
- VILLAGE TECHNOLOGY HANDBOOK by Volunteers in Technical Assistance, 1977 (VITA, Inc., Mt. Rainier, Md.) 387 pages.
- APPROPRIATE TECHNOLOGIES FOR DEVELOPING COUNTRIES by Richard S. Eckaus, 1977 (National Academy of Sciences, Washington, D.C.) 140 pages.
- RADICAL TECHNOLOGY by Peter Harper, Godfrey Boyle, & the editors of *Undercurrents*, 1976 (Pantheon Press, New York, N.Y.) 304 pages.
- FIRST STEPS IN VILLAGE MECHANIZATION by George A. Macpherson, 1975 (Tanzania Publishing House, Dar Es Salaam, Tanzania) 232 pages.
- AUSTRALIAN TRADITIONAL BUSH CRAFTS by Ron Edwards, 1977 (Schocken Books, New York, N.Y.) 143 pages.
- CLOUDBURST "A Handbook of Rural Skills & Technology," Vic Marks, Ed., 1973 (Cloudburst Press, Ltd., Seattle, Was.) 127 pages.
- PEDAL POWER "In Work, Leisure, & Transportation," James C. McCullagh, Ed., 1977 (Rodale Press, Emmaus, Pa.) 133 pages.

exploitive dictator of more growth." *BLIND FAITH IN THE OMNIPOTENCE OF TECHNOLOGY*, p.5

"In many countries of the world, small farmers have not yet made full use of the wheel. Instead, they carry loads on their heads, or on poles carried on their shoulders. The wheel can take most of the weight of a load and can make the transport of that load much easier, thus saving energy which can be put to more productive use." *FIRST STEPS IN VILLAGE MECHANIZATION*, p.61

"We find that a large wheel runs better than a small one, especially over bumpy ground. So we make wheels 45 cm in diameter." *FIRST STEPS IN VILLAGE MECHANIZATION*, p.62

- *ENERGY BASIS FOR MAN AND NATURE* by Howard T. & Elisabeth C. Odum, 1976 (McGraw-Hill Book Co., New York, N.Y.) 296 pages.
- *MAN, ENERGY, SOCIETY* by Earl Cook, 1976 (W.H. Freeman & Co., San Francisco, Ca.) 478 pages.
- *ENERGY FOR MAN* "From Windmills To Nuclear Power" by Hans Thirring, 1976 (Harper Colophon Books, New York, N.Y.) 409 pages.
- *ENERGY FOR SURVIVAL* "The Alternative to Extinction" by Wilson Clark, 1974 (Anchor Books, New York, N.Y.) 652 pages.
- *ENERGY AND AGRICULTURE IN THE THIRD WORLD* "A Report to the Energy Policy Project of the Ford Foundation" by Arjun Makhijani, 1975 (Ballinger Publishing Co., Cambridge, Ma.) 168 pages.

lihood of the hens eating the broken eggs." *VILLAGE TECHNOLOGY HANDBOOK*, p. 247

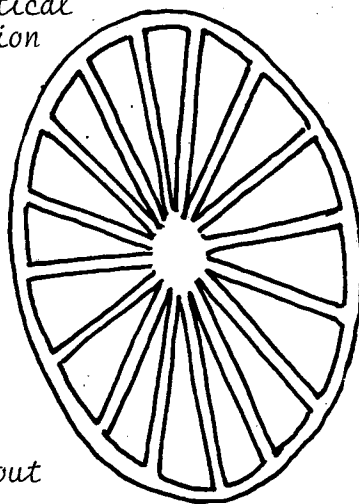
"Once the importance of political goals in development is recognized, then it becomes clear that the choice of economically inappropriate technologies may not be simply the result of ignorance about the consequences of the choice. Rather, it may reflect the dominance of political considerations, including the possibility that decision makers were unable to resolve conflicting objectives in any other manner than through economically inappropriate decisions." *APPROPRIATE TECHNOLOGIES FOR DEVELOPING COUNTRIES*, p.121

"On a small scale we readily feel the effectiveness of our small groups. But we have more difficulty relating to the larger systems of energy flow since our emotions are not readily attached to nonhuman, large systems. Education is required to help us see the workings of the larger institutions. No system can understand itself, since more intelligence is required to understand than to be. Individuals try millions of activities without much consciousness about

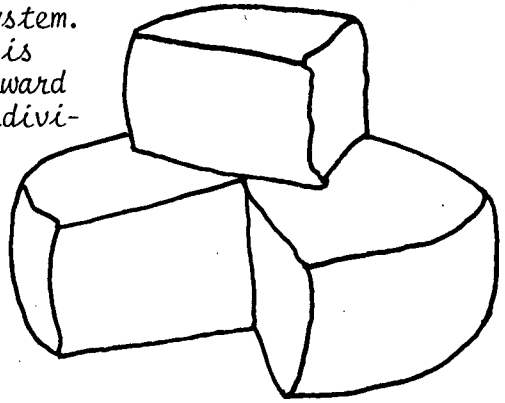
"The early farmer was often in need of a cross-country type of vehicle that would go where his ordinary carts could not move, and the fork sled was the answer. In form it was the ultimate in simplicity - simply a solid forked branch with a hole drilled into it to take a chain." *AUSTRALIAN TRADITIONAL BUSH CRAFTS*, p.113

"In laying houses, nests are also constructed of split bamboo for unobstructed ventilation. Conventional lumber nests are hotter; this may cause hens to lay eggs on the floor instead of in the nests. This

means more broken eggs and more like-



how these might affect other parts of the system. This is all right because an activity which is energy-effective will generate a feedback reward that causes it to be repeated or to grow. Individual freedom is a form of disorder that generates order when it interacts with unused energy." *ENERGY BASIS FOR MAN AND NATURE*, p.217



"Cheesemaking is simple and lots of good fun. All you need is plain old milk. To produce a superior product, always be sure to use raw milk." *CLOUDBURST*, p.108

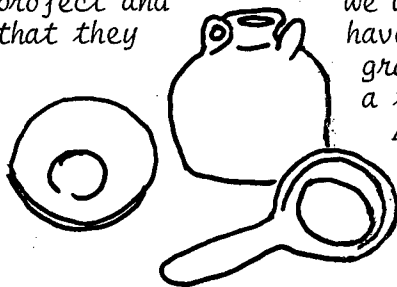
"Farm machines whose only purpose is to eliminate peak labor demands will deprive the poorest people of their only source of economic power. With the continuing strong pressure on food and money supply because of population growth and inflation, it is likely that the landless will be denied food, that they will migrate to the cities en masse in search of it, and die because they won't find it. The current large-scale migrations to the cities by the poor villagers of India and Bangladesh, hunting in vain for food, are a clear signal that the starving out of the landless is not an academic speculation." *ENERGY AND AGRICULTURE IN THE THIRD WORLD*, p.79

"An example of ecologically OK material is clay. The continual silting up of river estuaries produces more clay than is currently consumed. Its availability is not dependent on large corporations or high technology; many potters dig clay locally." *RADICAL TECHNOLOGY*, p.173

"And, quite apart from international conflicts, the private life of innumerable people is spoilt by futile quarrels caused by lack of mutual understanding, by an ill-tempered nervousness, and by the stubborn struggle for aims which in sober consideration hardly deserve being fought for." *ENERGY FOR MAN*, p. xxv.

"We examine the under-lying debate which we believe creates the basic confusion - the inability of people with competing philosophies to focus on the issue of whether or not resource scarcity is real and inevitable. What will happen? Do we have the personal or institutional capacity to share?" *TOWARD A CALIFORNIA ENERGY STRATEGY*, p.viii

"Lending institutions typically display the attitude of 'show us a sound project and we will loan on it.' But these institutions state that they have no basis for evaluating solar projects and will gradually become involved in solar installations on a trial-and-error basis." *ENERGY RESEARCH AND DEVELOPMENT PROGRAM*, p.52



"The utilities and growth advocates argued that an expanding supply of electric power was necessary to



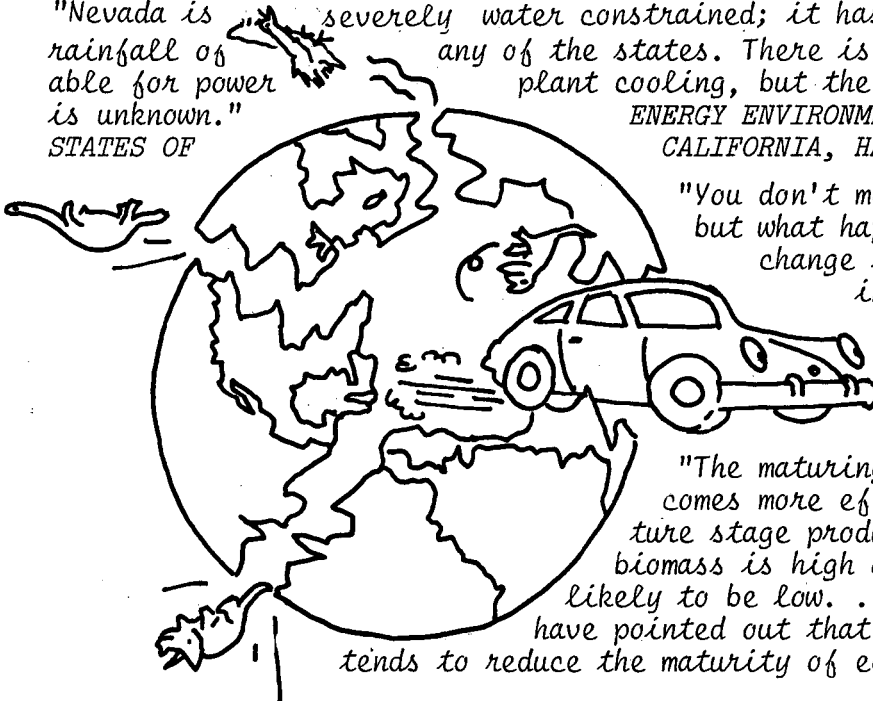
For more reading material in subjects covered here in pages 4-6, see chapters in: *ALTERNATIVE NATURAL ENERGY SOURCES*; *THE UNSETTLING OF AMERICA*; *PROGRESS AS IF SURVIVAL MATTERED*; *ECOSCIENCE*; *SOFT ENERGY PATHS*; *SCIENTIFIC TECHNOLOGY & SOCIAL CHANGE*; and *RAINBOOK*.

- *PERSPECTIVES ON ENERGY* "Issues, Ideas, and Environmental Dilemmas," Lon C. Ruedisili & Morris W. Firebaugh, Editors, 1978 (Oxford University Press, New York, N.Y.) 591 pages.
- *SUMMARY* from *California Energy Trends and Choices*, the 1977 Biennial Report of the State Energy Commission; 269 pages.
- *ENERGY AND POWER* by the Editors of *Scientific American*, 1971 (W.H. Freeman & Co., San Francisco, Ca.) 144 pages.
- *KILOWATT COUNTER* "A Consumer's Guide to Energy Concepts, Quantities, & Uses" by Gil Friend & David Morris of the Institute for Local Self-Reliance, 1975 (Alternative Sources of Energy, Inc., Milaca, Mn.) 34 pages.
- *TOWARD A CALIFORNIA ENERGY STRATEGY: POLICY OVERVIEW*, Vol.1 of *California Energy Trends and Choices*, the 1977 Biennial Report of the State Energy Commission; 213 pages.
- *ENERGY PRICES 1960-73* "A Report to the Energy Policy Project of the Ford Foundation" by Foster Associates, Inc., 1974 (Ballinger Publishing Co., Cambridge, Ma.) 259 pages.
- *ENERGY RESEARCH & DEVELOPMENT PROGRAM*, Vol.6 of *California Energy Trends and Choices*, the 1977 Biennial Report of the State Energy Commission; 149 pages.
- *ENERGY-ENVIRONMENT DATA BOOK FOR THE STATES OF CALIFORNIA, HAWAII & NEVADA*, compiled by Henry Ruderman, Joshua Kay, N. Faye Litterman, Anthony Usibelli and Graeme Welch, October 1978 (Lawrence Berkeley Laboratory Report-7821 for the U.S. Department of Energy) 419 pages.

"Nevada is severely water constrained; it has the lowest average rainfall of any of the states. There is some groundwater available for power plant cooling, but the extent of this resource is unknown."
ENERGY ENVIRONMENT DATA BOOK FOR THE STATES OF CALIFORNIA, HAWAII & NEVADA, p.325

"You don't measure energy itself, but what happens when an energy change takes place. A change in energy gives physical results which we can measure such as heat, light or motion."
KILOWATT COUNTER, p.2

"The maturing ecosystem also becomes more efficient. In the immature stage productivity per unit of biomass is high and total biomass is likely to be low. ...Margalef and others have pointed out that human intervention tends to reduce the maturity of ecosystems."
ENERGY AND



POWER, p.78

"Among the different forms of energy, the production component generally represented a larger portion of the total retail price of oil products than other energy forms." ENERGY PRICES p.50

"The institutionalization of take one's wealth in the individually performed may be the way for the transition to energy availability." ENERGY, p.574

the option to time and of goods
form of leisure service time instead a society to smooth a situation of reduced ity." PERSPECTIVES ON

"Air pollution has caused illness and death as well as dis- of 1273 prohibited the use of health." NUCLEAR POWER

been recognized as a cause of ill-comfort for centuries. An ordinance of coal in London as 'prejudicial to ISSUES AND CHOICES, p.188

"Fission technology re-guarantees on events far clear in most cases how this can be done. Insti- do not exist and never have existed to guarantee or attendance upon storage facilities over a millen- of a million years, serious geological uncertainties even the survival of man may be doubtful. 'In perpetu- has little real meaning in human affairs.'" THE NUCLEAR FUEL CYCLE, p.220

quires that man issue future, and it is not tutional arrangements the monitoring of nium. In the range arise and ity'

"In-plant security measures could create a somewhat dating work environment in that they would impose a order of rights and obligations on civilian plutonium

intimi- military workers.

- FOSSIL FUEL SUPPLY ISSUES, Vol.4 of California Energy Trends and Choices, the 1977 Biennial Report of the State Energy Commission; 476 pages.
- THE CALIFORNIA NUCLEAR INITIATIVE by the Stanford University Institute for Energy Studies, W.C. Reynolds, Ed., 1976 (Palo Alto, Ca.) 220 pages.
- NUCLEAR POWER ISSUES AND CHOICES, a Report of the Nuclear Energy Policy Study Group sponsored by the Ford Foundation, 1977 (Ballinger Publishing Co., Cambridge, Ma.) 418 pages.
- THE NUCLEAR FUEL CYCLE "A Survey of the Public Health, Environmental, and National Security Effects of Nuclear Power" by the Union of Concerned Scientists, 1975 (MIT Press, Cambridge, Ma.) 291 pages.
- NUCLEAR POWER-THE UNVIABLE OPTION "A Critical Look At Our Energy Alternatives" by John J. Berger, 1976 (Ramparts Press, Palo Alto, Ca.) 384 pages.

For further reading in the "hard stuff" see chapters in: MIAMI CONFERENCE PROCEEDINGS; PERSPECTIVES ON ENERGY; SOFT ENERGY PATHS; TWENTY-NINTH DAY; RAYS OF HOPE; ENERGY WE CAN LIVE WITH; KILOWATT COUNTER; SCIENTIFIC TECHNOLOGY & SOCIAL CHANGE; ENERGY FOR MAN; and ENERGY FOR SURVIVAL.

- *TAKING CHARGE* "A New Look At Public Power" by Richard Morgan, Tom Riesenberg, & Michael Troutman, 1977 (Environmental Action Foundation, Washington, D.C.) 100 pages.

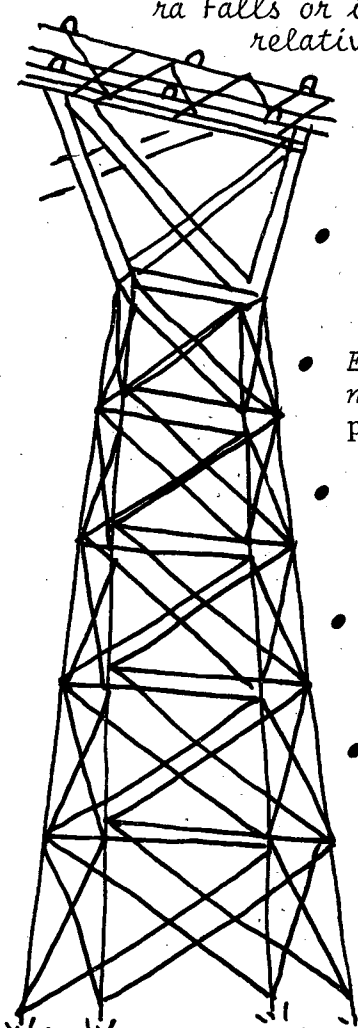
This would in itself, however, not seriously affect the civil liberties of others in the nation." *THE CALIFORNIA NUCLEAR INITIATIVE*, p.159

"The only alternative to conservation is new energy supplies. But to expand supplies while neglecting the ever-growing stock of inefficient machines and houses, where that energy is squandered, is exactly like pouring more and more water into a leaky bucket." *NUCLEAR POWER, THE UNVIABLE OPTION*, p.234

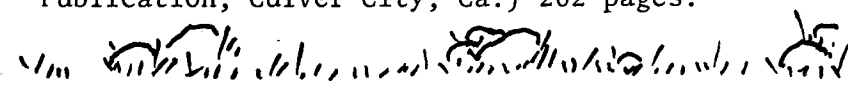
"As we have seen, many nonprofit electric systems already operate in a progressive fashion. The reason that they do so is that their size and structure makes them accessible to their consumer-owners." *TAKING CHARGE*, p.44

"In transmitting large amounts of power over long distances, the power consumed by the resistance of the conducting wires is lost as heat. ... If current in the line is doubled, the power lost is four times as much, the loss varying as the square of the current. Or, if current in the line is halved, the power lost is only one-quarter as much. Thus, power generated at Niagara Falls or in the Tennessee Valley may be sent across country with relatively small loss if current is kept as low as possible.

(cont.)



- *BASIC ELECTRICITY* prepared by the Bureau of Naval Personnel, 1970 (Dover Publications, New York, N.Y.) 490 pages.
- *ELECTRICAL FUNDAMENTALS (ALTERNATING CURRENT)* prepared by the Department of the Army as A Technical Manual, 1951; 231 pages.
- *ELECTRICITY FORECASTING AND PLANNING*, Vol.2 of *California Energy Trends and Choices*, the 1977 Biennial Report of the State Energy Commission; 165 pages.
- *POWER PLANT SITING*, Vol.7 of *California Energy Trends and Choices*, the 1977 Biennial Report of the State Energy Commission; 62 pages.
- *LEFFEL TURBINES* (Red Bound Data Book), Information contributed by the James Leffel Company of Springfield, Ohio; about 50 pages.
- *WIRING SIMPLIFIED*, 31st Edition, based on 1975 code, by H.P. Richter, 1975 (Park Publishing Co., St. Paul, Mn.) 159 pages.
- *ELECTRIC VEHICLES* "Design & Build Your Own" by Michael Hackleman, 1977 (Earthmind/Peace Press Publication, Culver City, Ca.) 202 pages.



This is done by means of a power output of the generators to a high-voltage, low-current level for transmission and then reconverts this level for consumption in the home." *ELECTRICAL FUNDAMENTALS*, p.122



transformer, which converts the power output of the generators to a high-voltage, low-current level for transmission and then reconverts this level for consumption in the home." *ELECTRICAL FUNDAMENTALS*, p.122

"If you don't cover its skeleton, your EV will look like an incomplete vehicle or a dune buggy. For the wetter seasons, a skin is nice. For the colder environments, a skin is nice. And to cover up sometimes - ugly frame-jobs, a skin is a must. It serves other functions as well. It keeps road dust out of the EV's innards (and yours, too)." *ELECTRIC VEHICLES*, p.148

ton, your EV will look like an incomplete vehicle or a dune buggy. For the wetter seasons, a skin is nice. For the colder environments, a skin is nice. And to cover up sometimes - ugly frame-jobs, a skin is a must. It serves other functions as well. It keeps road dust out of the EV's innards (and yours, too)." *ELECTRIC VEHICLES*, p.148

"The constant-speed characteristic makes the use of shunt motors desirable for driving machine tools or any other device that requires a constant-speed driving source. Where there is a wide variation in load, or where the motor must start under a heavy load, series motors have desirable features not found in shunt motors." *BASIC ELECTRICITY*, p.379

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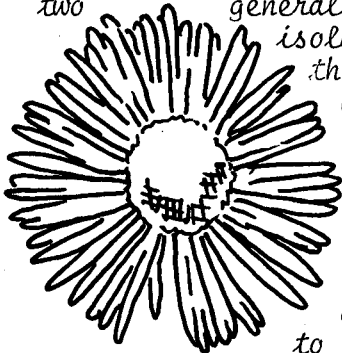
"Grounds in buildings housing livestock should be installed so that seepage from animal manure does not saturate the ground around the rod. Chemical action in time eats up the wire, the clamp, and sometimes even the rod, so that what was once a good ground turns out to be no ground at all." *WIRING SIMPLIFIED*, p.131

For more on electricity, see chapters in *ALTERNATIVE SOURCES OF ENERGY*; *INTRODUCTION TO APPROPRIATE TECHNOLOGY*; *SOFT ENERGY PATHS*; *OTHER HOMES & GARBAGE*; *SCIENTIFIC TECHNOLOGY & SOCIAL CHANGE*; *SURVIVAL SCRAPBOOK #3*; *KILOWATT COUNTER*; *ENERGY FOR MAN*; *ENERGY FOR SURVIVAL*; and *SPECTRUM*. See also: *ELECTRICAL CODE FOR ONE- AND TWO-FAMILY DWELLINGS* and *GENERATION OF ELECTRICITY BY WIND POWER*.

"A unit in a high-rise building may provide better ventilation (or even too much wind) by being higher above the ground and able to catch winds which are faster and less obstructed by objects on the ground. It may not be shaded by trees and adjacent structures, which means more solar control could be necessary. It also consumes energy through the elevators, which are necessary to reach higher floors. The noise and dust created by traffic on the ground is farther away, too, which may help eliminate the need for air conditioning." *HAWAII HOME ENERGY BOOK*, p.119



"Examination of the culture of contemporary rural communities shows that two generalizations seem to be possible. One is that the cultural isolation of rural communities is under great pressure from the larger society; the other is that there is variation among communities as they respond to the pressure of mass society. The variation is based on differences in culture, often of ethnic and religious groups." *THE RURAL COMPONENT OF AMERICAN SOCIETY*, p.147



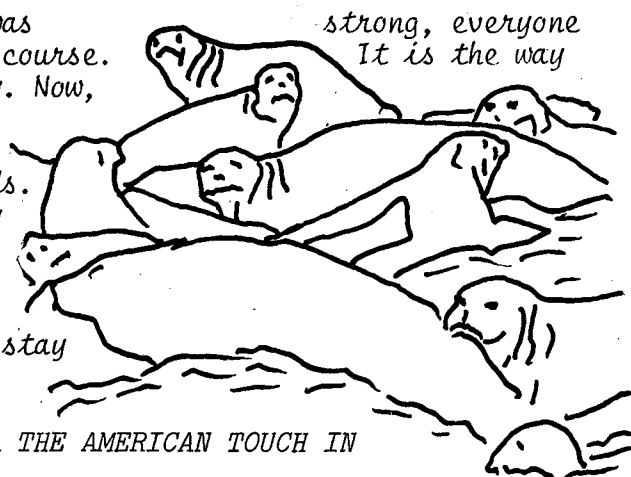
"First, we should recognize that this is not 1945, and we are no longer viewed as liberators by Guam. We are asking her to make some very great sacrifices in order to be "American." The presence of the U.S. military, which

- *HAWAII HOME ENERGY BOOK* by Jim Pearson, 1978 (University Press of Hawaii, Honolulu) about 183 pages.
- *MICRONESIA AND U.S. PACIFIC STRATEGY* "A Blueprint for the 1980's" by James H. Webb, Jr., 1974 (Praeger Publishers, New York, N.Y.) 109 pages.
- *MICRONESIA AT THE CROSSROADS* "A Reappraisal of the Micronesian Political Dilemma" by Carl Heine, 1977 (The University Press of Hawaii, Honolulu) 210 pages.
- *POLITICAL DEVELOPMENT IN MICRONESIA*, Daniel T. Hughes & Sherwood G. Lingensfelder, Editors, 1974 (Ohio State University Press, Columbus, Ohio) 333 pages.
- *THE AMERICAN TOUCH IN MICRONESIA* by David Nevin, 1977 (W.W. Norton & Co., Inc., New York, N.Y.) 217 pages.
- *THE THEORY OF ISLAND BIOGEOGRAPHY* by Robert H. MacArthur & Edward O. Wilson, 1967 (Princeton University Press, N.J.) 203 pages.
- *AMERICAN INDIAN ALMANAC* by John Upton Terrell, 1974 (Thomas U. Crowell Co., New York, N.Y.) 494 pages.
- *THE RURAL COMPONENT OF AMERICAN SOCIETY* (Text) by Edward W. Hassinger, 1978 (Interstate Printers & Publishers, Danville, Il.) 397 pages.

now includes strategic bases for the Strategic Air Command and nuclear submarines, and a huge ammunition storage area, changes Guam from a possible conventional target into a probable nuclear target." *MICRONESIA AND U.S. PACIFIC STRATEGY*, p.75

"Global patterns of distribution also need to be reconsidered. We know that species diversity, relative abundance, and population geometry change with climate. Such variation affects on the one hand the structure, stability, and energy flow of the plant and animal communities. It must also affect the rate and perhaps mode of speciation, together with the propensity for adaptive radiation. Almost certainly it determines the dominance of the biota of one region over that of another..." *THE THEORY OF ISLAND BIOGEOGRAPHY*, p.183

"In the past, when communal living was helped everyone else as a matter of course. things were. Now it is not that easy. Now, in the markets, you see them selling food, food that always before was a gift, made to relatives and friends. But it would be very difficult today for someone to expect that the next one would help him out. Even among brothers and sisters, they sell things, they expect payment. So, to stay as we are will be difficult, but to go back, well, that also would be difficult." Chutomu Nimwes, Truk, in *THE AMERICAN TOUCH IN*



MICRONESIA, p.187

"There was also a practice of the paramount chief and the minister (of Ponape) each choosing his attendants from the other's line. The practice meant that both leaders were constantly surrounded by relatives of the other. Such pressures for cooperation appear to have been generally successful. Many wars between different clans and between different sub-clans have been reported. But there is no record of any war between the paramount chief's clan and the minister's clan in the same state." *POLITICAL DEVELOPMENT IN MICRONESIA*, p.16

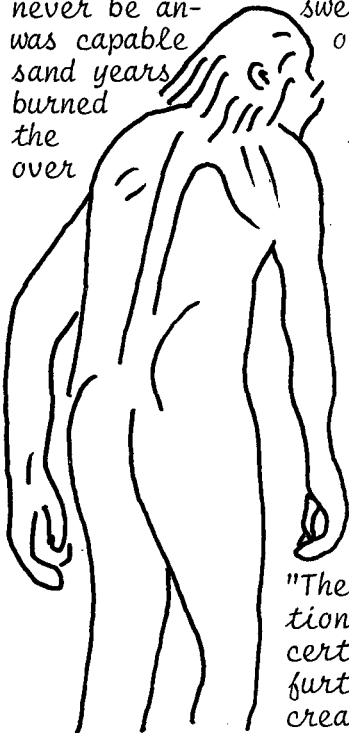
"The Palauans view their economic problems in terms of their land and how much the United States is willing to compensate them for use of these lands. Thus, they ask, who has ownership rights in Palau? The original owners or the present Trust Territory government? The government continues to say that it is holding these lands in trust for the Palauans." *MICRONESIA AT THE CROSSROADS*,

p.172

For further reading in the subject of human problems, covered here in pages 10-12, see chapters in: *PROGRESS AS IF SURVIVAL MATTERED*; *ECOSCIENCE*; *RAIN-BOOK*; *TWENTY-NINTH DAY*; and *LIKLIK BUK*.

"Public policy should respond to the expressed needs of the community rather than impose preconceived notions of what communities and individuals should want. Only the people faced with a range of problems can decide which ones have priority." *LOCAL RESPONSES TO GLOBAL PROBLEMS*, p.53

"The bones recovered were soon identified as those of Pleistocene mammals which had become extinct in the region probably by 10,000 B.C. How long they had grazed there before they vanished is perhaps a question that will never be answered, but geologists have determined that the country was capable of supporting such mammals at least thirty-five thousand years ago. ...The presence of charcoal in association with and split bones indicated that man had been there at time of the ancient animals and had cooked his meat over campfires. ...found a man-made cutting tool 'in immediate association with charcoal and bone fragments.' ...more than 23,800 years old." *AMERICAN INDIAN ALMANAC*, pp.367-368



"So dubious are the advantages of immigration that one wonders why the governments of industrial nations favor it. ...One will find few clarifications, but official statements hint that the goals are to fill essential jobs and to stimulate population growth.

One suspects that the actual causes are government inertia and pressure by employers to obtain cheap labor." *THE HUMAN POPULATION*, p.65

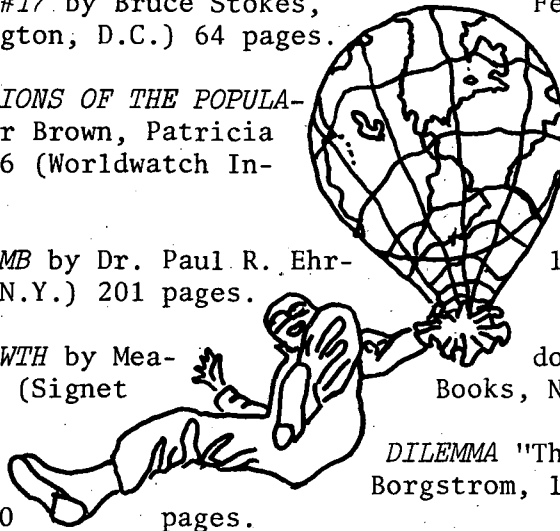
"There is every reason to believe that diminishing population pressures will reduce the probability of war... It is certainly clear that if population growth proceeds much further the probabilities of wars will be immensely increased." *THE POPULATION BOMB*, p.178



"The human race historically cultivated over 3000 species of plants for food, about half of them in sufficient quantity to enter into commerce. Today, in stark contrast, only fifteen species including rice, corn, wheat, sorghum, barley, sugar cane, sugar beets, potato, sweet potato, cassava, the common bean, soybean, peanut, coconut, and banana actually feed the entire world, providing 85-90 percent of all human energy. Of these, only three plants, wheat, rice, and corn now supply 66 percent of the world's seed crop." *FOOD FIRST*, p.173

"There is always a tendency, fueled by immediate needs to seek short-term gains even at the expense of long-range benefits. Grave consequences can result, also, if a satisfactory short-range situation is mistaken for a long-range one. For example, the abundance of food, which was heralded several years ago, has proven to be very short-lived." *MANKIND AT THE TURNING POINT*, p.85

- *THE HUMAN POPULATION* by Editors of *Scientific American*, 1974 (W.H. Freeman & Co., San Francisco, Ca.) 147 pages.
- *MANKIND AT THE TURNING POINT* "The Second Report to the Club of Rome" by Mihajlo Mesarovic & Eduard Pestel, 1976 (Signet Books, New York, N.Y.) 210 pages.
- *LOCAL RESPONSES TO GLOBAL PROBLEMS: A KEY TO MEETING BASIC HUMAN NEEDS*, *Worldwatch Paper #17* by Bruce Stokes, February 1978 (Worldwatch Institute, Washington, D.C.) 64 pages.
- *TWENTY-TWO DIMENSIONS OF THE POPULATION PROBLEM*, *Worldwatch Paper #5* by Lester Brown, Patricia Stokes, March 1976 (Worldwatch Institute, Washington, D.C.) 80 pages.
- *THE POPULATION BOMB* by Dr. Paul R. Ehrlich, 1976 (Ballantine Books, New York, N.Y.) 201 pages.
- *THE LIMITS TO GROWTH* by Meadows, Meadows, Randers, & Behrens III, 1975 (Signet Books, New York, N.Y.) 207 pages.
- *THE FOOD & PEOPLE DILEMMA* "The Man-Environment System Series" by Georg Borgstrom, 1973 (Duxbury Press, No. Scituate, Ma.) 140 pages.
- *FOOD FIRST* "Beyond the Myth of Scarcity" by Frances Lappe & Joseph Collins with Cary Fowler, 1977 (Houghton Mifflin Co., Boston, Ma.) 466 pages.



"Man has unquestionably become a 'superfactor' in the world of living nature. By arbitrarily removing water, especially by drying up its natural flow, he has caused great upheaval in the living world, eradicating many animals, changing their habitats, and affecting practically the entire fauna and flora. ...Man now outnumbers by far all other species of major mammals, and he has placed under his domination -merely to obtain food- more than one-fifth of the primary production of the green plant cover. Seemingly, man's power position is well entrenched, but his basis is fragile. Despite

his potency and his technological arsenal, man's vulnerability has increased. His rule is faltering because he has not mastered the difficult art of self-restraint." *THE FOOD & PEOPLE DILEMMA*, p.106

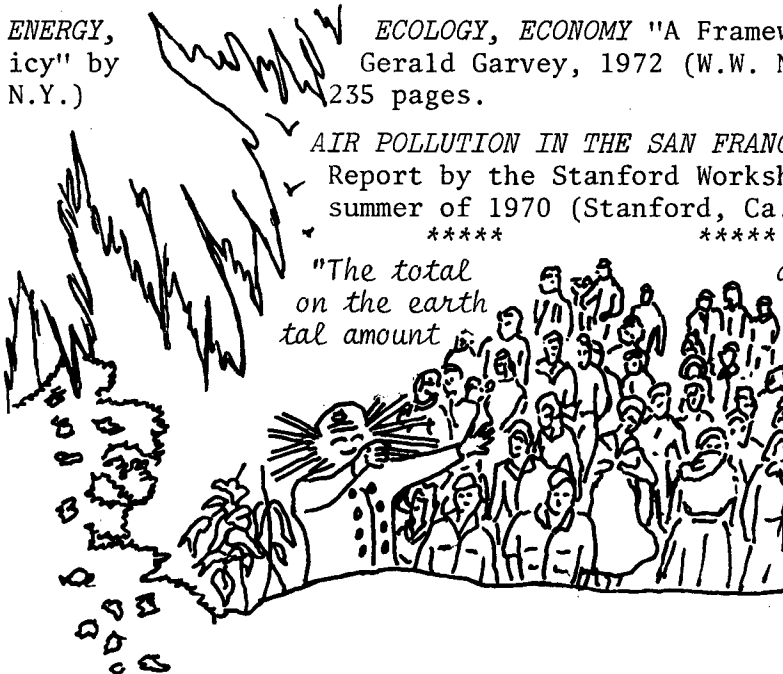
"The global implications of resource scarcity were dramatized in 1975 by discussions of possible military intervention by the oil-deficit United States in the Middle East oil-exporting region. In early 1976, another cast of combatants is embroiled in resource-rich Angola... International conflict born of resource competition shows every promise of spreading to other theaters." *TWENTY-TWO DIMENSIONS OF THE POPULATION PROBLEM*, p.57

- *HUMAN ECOLOGY* "Problems and Solutions" by Paul R. & Anne H. Ehrlich and John P. Holdren, 1973 (W.H. Freeman & Co., San Francisco, Ca.) 304 pages.
- *MAN AND THE ECOSPHERE*, Readings from *Scientific American*, Paul R. Ehrlich, John P. Holdren, & Richard W. Holm, Editors, 1971 (W.H. Freeman & Co., San Francisco, Ca.) 307 pages.
- *ECOLOGY, EVOLUTION, AND POPULATION BIOLOGY*, Readings from *Scientific American*, Introductions by Edward Wilson, 1974 (W.H. Freeman & Co., San Francisco, Ca.) 319 pages.
- *ECOSCIENCE* "Population, Resources, Environment" by Paul R. & Anne H. Ehrlich and John P. Holdren, 1977 (W.H. Freeman & Co., San Francisco, Ca.) 1051 pages.
- *ECOLOGY AND THE POLITICS OF SCARCITY* "Prologue to a Political Theory of the Steady State" by William Ophuls, 1977 (W.H. Freeman & Co., San Francisco, Ca.) 303 pages.
- *CONTEMPORARY READINGS IN ECOLOGY* by Arthur S. Boughey, 1969 (Dickenson Publishing Co., Inc., Belmont, Ca.) 390 pages.
- *CONCEPTS OF APPLIED ECOLOGY* by Robert S. De Santo, 1978 (Springer-Verlag, New York, N.Y.) 310 pages.
- *ENERGY, ECOLOGY, ECONOMY* "A Framework for Environmental Policy" by Gerald Garvey, 1972 (W.W. Norton & Co., Inc., New York, N.Y.) 235 pages.

- *AIR POLLUTION IN THE SAN FRANCISCO BAY AREA* "A Condensed Report by the Stanford Workshop on Air Pollution" in the summer of 1970 (Stanford, Ca.) 21 pages.

"The total amount of solar energy fixed on the earth

sets one limit on the total amount of life; the patterns of flow of this energy through the earth's ecosystems set additional limits on the kinds of life on the earth. Expanding human activities are requiring a larger fraction of the total and are paradoxically making



large segments of it less useful in support of man." from "The Energy Cycle of the Biosphere" by George M. Woodwell, *ECOLOGY, EVOLUTION, AND POPULATION BIOLOGY*, p.204.

"Nonintervention is not a law that man could obey even if he wanted to except at the price of extinction. Merely by existing, all organisms intervene in nature. As long as they are confined to the evolutionary role prescribed for them, not only do they not harm the biosphere, they positively contribute to its richness. Unfortunately, man's evolutionary role in the strict biological sense is that of a hunter-gatherer without fire or other elements of even the crudest technology." *ECOLOGY AND THE POLITICS OF SCARCITY*, p.32

"Even though nitrogen is by far the greatest fraction of the atmosphere, it is regularly a limiting factor for plant growth. Nitrogen gas in the atmosphere is inert, chemically inactive, and un-
available for the required metabolic activities of most organisms. However, a few known genera of bacteria and several species of blue-green algae are capable of removing nitrogen gas from the environment and converting it into ammonia." *CONCEPTS OF APPLIED ECOLOGY*, pp.170-171



"In many tropical areas the soils are extremely poor. They cannot maintain large reserves of minerals needed for plant growth, such as phosphorus, potassium, and calcium, primarily because heavy rainfall and the resultant leaching cause a high rate of water flow through the ground to the water table. Most of the nutrients in a tropical jungle are concentrated not in the soil but in the vegetation. ...The extensive shallow root systems of the forest trees absorb the nutrients as soon as they are released. Since most jungle trees are evergreen, the process is continuous. ...When a tropical forest is defoliated or cleared for agriculture...The soil is exposed to sun and oxygen, and a series of complex chemical changes takes place, often resulting in the formation of a rock-like substance called laterite." *HUMAN ECOLOGY*, p.162

"Many natural processes and most human activities release contaminants of some kind into the air. It is only when such contaminants are present in the atmosphere in such concentrations and for sufficient time to cause adverse effects that the air is rightfully considered 'polluted.'" *AIR POLLUTION IN THE SAN FRANCISCO BAY AREA*, p.1

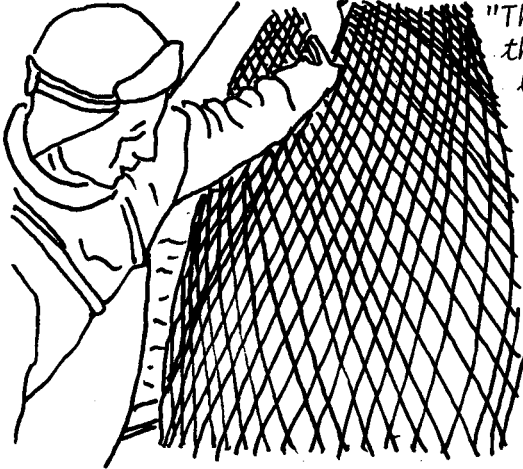
"Over a long period of time the continuous introduction and movement of particles creates a dome-shaped layer of haze over the city. This structure...has long been characteristic of large cities, although in recent years, the general dirtiness of the air has made the dome harder to distinguish from its surroundings than it was several decades ago." *MAN AND THE ECOSPHERE*, p.186

"People packed into America's urban corridors and tied to a going economic structure cannot take the frontiersman's solution: 'move away.' So when the environment no longer absorbs pollutants, residues, and wastes, then pollutants, residues, and wastes become the environment." *ENERGY, ECOLOGY*,

ECONOMY, p.114

"It is impossible to refer to the efficiency of a population. The term must at all times be qualified. We can speak only of the efficiency of producing energy in some form which we arbitrarily consider useful (the output) from some other form which we arbitrarily define as useless (the input)."

CONTEMPORARY READINGS IN ECOLOGY, p.237



"The energy stored in liquid hydrogen is three times that in an equal amount of gasoline by weight but one-third that in an equal amount of gasoline by volume. The low volumetric energy content and relative difficulty of maintaining hydrogen as a liquid (which requires very low temperatures) have led to interest in storing hydrogen as solid metal hydrides for use in automobiles." *ECOSCIENCE*, p.482

"Nonpoint source pollutants from crop production systems include sediments, nutrients, and pesticides. ...By volume, sediment is the most important agricultural

nonpoint source pollutant. ...Although sediments result principally from the erosion of soils, they may also include crop debris, which may place an oxygen demand on receiving waters during their decomposition." *COASTAL ECOSYSTEM MANAGEMENT*, p.595

"While trawling seems to have begun at the beginning of the seventeenth century or even earlier, it has only grown into a great industry during the last hundred years." *THE OPEN SEA, II*, p.145

"The development of fisheries for new, less familiar species offers a similar range of scientific, technical and economic problems. The main problem is probably technical and economic: of developing, on the one hand, methods of catching and processing and, on the other, a market such that they can be caught at a cost that the market will pay. ...One potential that has received much attention is the krill in the Antarctic. Soviet studies of this resource have been going on for some time and have reached the stage of pilot scale production of a cheese mixed with krill, which tastes pleasantly of shrimp." *THE ECOLOGY OF THE SEAS*, p.313

- *COASTAL ECOSYSTEM MANAGEMENT* "A Technical Manual for the Conservation of Coastal Zone Resources" by John R. Clark, 1977 (John Wiley & Sons, New York, N.Y.) 928 pages.
- *THE OPEN SEA: ITS NATURAL HISTORY* (One volume includes books I and II) by Sir Alister Hardy, 1970 (Houghton Mifflin, Boston, Ma.) 657 pages.
- *THE ECOLOGY OF THE SEAS*, D.H. Cushing & J.J. Walsh, Editors, 1976 (W.B. Saunders Co., Philadelphia, Pa.) 467 pages.

"Actually, the urban dweller today is more isolated in the big city than his ancestors were in the countryside. The city man in the modern metropolis has reached a degree of anonymity, social atomization, and spiritual isolation that is virtually unprecedented in human history." *OUR SYNTHETIC*

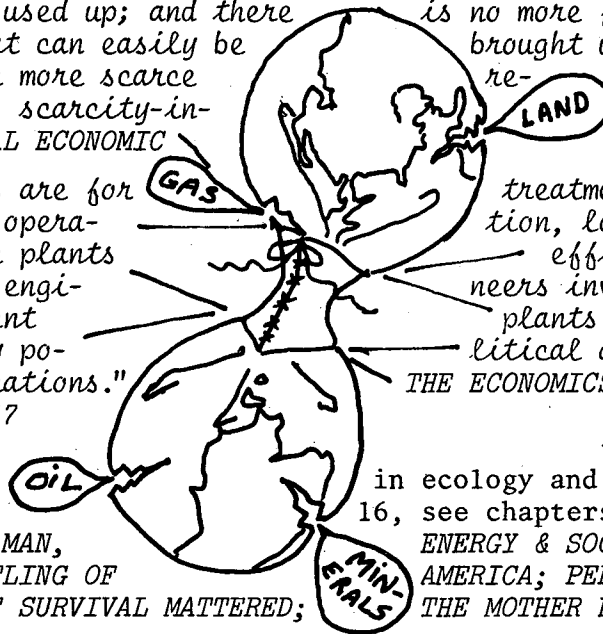
ENVIRONMENT, p.244

"We cannot be expected voluntarily to lower our life-standards, but we can be invited to change them, to accord with a more sensible and far-sighted view of man's place on the planet and his demands upon its resources. At least we may reasonably be asked to forego some or all of that envious ambition to raise our economic consumption levels which is expressed in adulation of economic growth. It is our duty in the richer countries to save ourselves by our endeavours and the world by our example." *THE DISECONOMICS OF GROWTH*, pp.212-213

"During the seventies, efforts to manage inflation have been consistently less successful than in the past, in part because new sources of inflation are emerging. In simplest terms, the new inflationary forces arise from the claims on the earth's resources of a continuously expanding global economy. As described earlier, at some point biological systems begin to deteriorate; oil wells begin to go dry; high-grade, easily accessible mineral reserves are used up; and there is no more fertile, well-watered cropland that can easily be brought under the plow. As the demand for the more scarce resources begins to outstrip supplies, scarcity-in-result." *THE GLOBAL ECONOMIC PROSPECT*, p.22

"Because subsidies are for treatment, but not for operation, local treatment plants are poorly operated often being run by political appointees without technical qualifications." *THE ECONOMICS OF ENVIRONMENTAL QUALITY*, pp.216-217

For more material here in pages 13-16, see chapters in: *MIAMI CONFERENCE PROCEEDINGS; MAN, ENERGY; THE UNSETTLING OF ENERGY; PROGRESS AS IF SURVIVAL MATTERED; and RAYS OF HOPE.*



treatment-plant construction, localities lack in-efficiently. Water-neers invariably report plants are poorly operated political appointees without

in ecology and economics, covered 16, see chapters in: *MIAMI CONFERENCE PROCEEDINGS; MAN, ENERGY & SOCIETY; LIVING WITH AMERICA; PERSPECTIVES ON ENERGY; THE MOTHER EARTH NEWS No.36;*

"Or maybe by now everything is so completely out of control as a result of man's inept stewardship that the environment is simply in the process of dumping our system before our system can dump the environment and that what

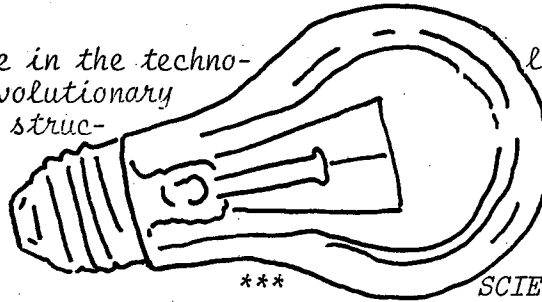
- *THE ECONOMICS OF ENVIRONMENTAL QUALITY* by Edwin S. Mills, 1978 (W.W. Norton & Co., New York, N.Y.) 304 pages.
- *THE GLOBAL ECONOMIC PROSPECT: NEW SOURCES OF ECONOMIC STRESS*, *Worldwatch Paper #20* by Lester R. Brown, May 1978 (Worldwatch Institute, Washington, D.C.) 56 pages.
- *THE DISECONOMICS OF GROWTH* by H.V. Hodson, 1972 (Earth Island Ltd., London, England) 293 pages.
- *OUR SYNTHETIC ENVIRONMENT* by Murray Bookchin, 1974 (Harper Colophon Books, New York, N.Y.) 305 pages.

"The spirit of self-management is manifest not only in the workplace and in the political arena but also in people's minds - in their perceptions of themselves and of their relations with others. They are groping away from self-subordination to authority and toward self-actualization." *THE PROMISE OF THE COMING DARK AGE*, p.137

"But the directors were still uncertain about the future of the invention. Was it 'only a laboratory toy,' as one of them charged? Would it not need a good deal of work before it became marketable?" from "The Invention of the Electric Light" by Matthew Josephson, *SCIENTIFIC TECHNOLOGY AND SOCIAL CHANGE*, p.136

"What is good for business is not always good for the rest of the country. Growth and environmental quality sometimes conflict, and growth is the foremost goal of most businesses, including the energy business." *A TIME TO CHOOSE*, p.10

"Every major advance in the technoman has enforced revolutionary economic and political structure. The present age of exception to this already know the can bestow; we have frightful threats."



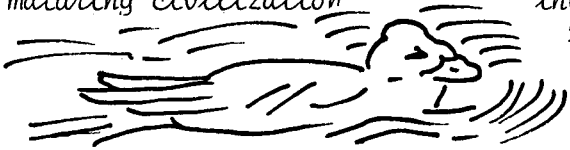
logical competence of changes in the structure of society. technology is no rule of history. We enormous benefits it begun to perceive its

- *SCIENTIFIC TECHNOLOGY AND SOCIAL CHANGE*, Readings from *Scientific American*, Introductions by Gene Rochlin, 1974 (W.H. Freeman & Co., San Francisco, Ca.) 403 pages.
- *THE HIGH FRONTIER* by Gerard O'Neill, 1977 (William Morrow & Co., Inc., New York, N.Y.) 288 pages.
- *SCIENCE AND SURVIVAL* by Barry Commoner, 1970 (Viking Press, New York, N.Y.) 150 pages.
- *GOALS FOR MANKIND* "A Report to the Club of Rome on New Horizons of Global Community" by Ervin Laszlo *et al.*, 1977 (E.P. Dutton, New York, N.Y.) 434 pp.
- *TOWARD A STEADY-STATE ECONOMY*, Herman Daly, Ed., 1973 (W.H. Freeman & Co., San Francisco, Ca.) 332 pages.
- *THE CALIFORNIA TOMORROW PLAN*, Alfred Heller, Ed., 1972 (William Kaufman, Inc., Los Altos, Ca.) 120 pages.
- *A TIME TO CHOOSE* by the Energy Policy Project, Ford Foundation, 1976 (Ballinger Publishing Co., Cambridge, Ma.) 511 pages.
- *ARK II* "Social Response to Environmental Imperatives" by Dennis C. Pirages & Paul R. Ehrlich, 1974 (Viking Press, New York, N.Y.) 344 pages.
- *SEVEN SISTERS* by Anthony Sampson, 1976 (Bantam Books, New York, N.Y.) 395 pp.
- *RIO, RESHAPING THE INTERNATIONAL ORDER*, "A Report to the Club of Rome," Tinbergen, Dolman, van Ettinger, *et al.*, (Signet Books, New York) 432 pages.

"...consider the giant Four Corners power complex in the desert of north-eastern Arizona. The electricity generated there is used mainly in Southern California and other distant places more affluent than the Four Corners area. The nearby Navajo hogans do not have air conditioners and other major electrical appliances. The Indians and other local residents are subjected to the air pollution and the strip mining that accompany electricity production, and the benefits of "clean" electricity go to affluent suburban Americans." *TOWARD A STEADY-STATE ECONOMY*, p.266

"Clearly our first task is to use the material wealth of space to solve the urgent problems we now face on earth: to bring the poverty-stricken segments of the world up to a decent living standard, without recourse to war or punitive action against those already in material comfort; to provide for a maturing civilization the basic energy vital to its survival."

THE HIGH FRONTIER, p.230



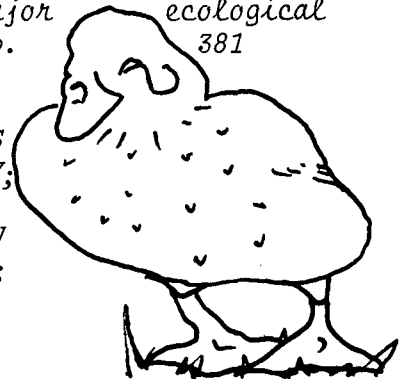
"The affluent young oppose further industrialization, but the underprivileged young favor it. To the affluent, industrial smokestacks mean pollution and inhumane work; to the poor, they mean economic security and access to highly desired goods and living conditions." *GOALS FOR MANKIND*, p.364

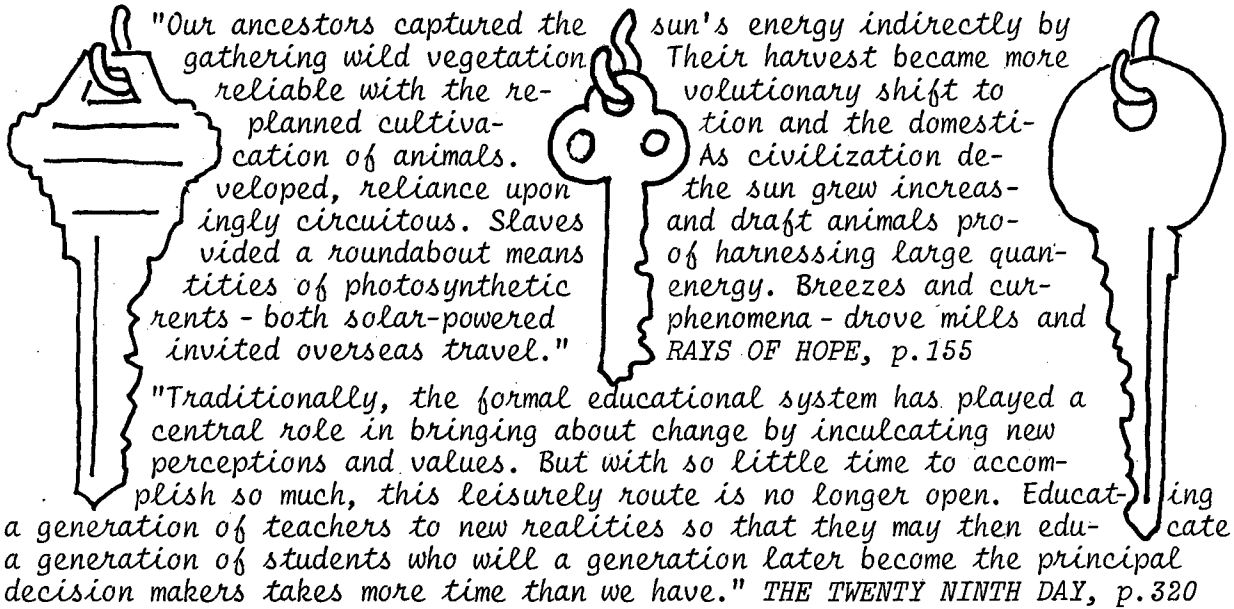
"People in the industrial world do not require more material artifacts; rather they require a pause to let bodies, minds, and culture catch up with and assert control over a technology that has gone wild." *ARK II*, p.280

"Some amenities, however, such as the pleasure of seeing wintering ducks on a country pond or of being able to see for miles on a hot summer day, are not so easily converted to numerical equivalents. Nor should they be. What precise dollar values, ultimately, can be put on maintaining and preserving the delicate ecosystems that keep us alive on 'spaceship earth'?" *THE CALIFORNIA TOMORROW PLAN*, p.102

"Thus bioconversion of solar energy could become once more the cornerstone of many industries. Interesting as this may be for all countries, irrespective of their climate and industrial advancement, this new turn in technology should be particularly welcome in tropical regions that enjoy a comparative advantage as far as natural conditions for photosynthesis are concerned. A unique opportunity seems to be unfolding for them to industrialize on an entirely new technological basis, well adapted to their climatic conditions and environmentally sound, provided it is supported by rational management of renewable resources, systematic replanting of forests, etc. Otherwise, such industrialization might lead to a major ecological disaster." *RIO: RESHAPING THE INTERNATIONAL ORDER*, p. 381

For more "life style" material, as covered in pages 17-23, see chapters in: *MIAMI CONFERENCE PROCEEDINGS ALTERNATIVE SOURCES OF ENERGY*; *MAN, ENERGY & SOCIETY*; *INTRODUCTION TO APPROPRIATE TECHNOLOGY*; *PROGRESS AS IF SURVIVAL MATTERED*; *ECOSCIENCE*; *JOURNAL OF THE NEW ALCHEMISTS*; *RADICAL TECHNOLOGY*; *ENERGY FOR SURVIVAL*; *RAINBOOK*; and *APPROPRIATE TECHNOLOGY SOURCEBOOK*.





"Our ancestors captured the sun's energy indirectly by gathering wild vegetation. Their harvest became more reliable with the revolutionary shift to planned cultivation and the domestication and the domestication of animals. As civilization developed, reliance upon the sun grew increasingly circuitous. Slaves and draft animals provided a roundabout means of harnessing large quantities of photosynthetic energy. Breezes and currents - both solar-powered phenomena - drove mills and invited overseas travel." *RAY'S OF HOPE*, p.155

"Traditionally, the formal educational system has played a central role in bringing about change by inculcating new perceptions and values. But with so little time to accomplish so much, this leisurely route is no longer open. Educating a generation of teachers to new realities so that they may then educate a generation of students who will a generation later become the principal decision makers takes more time than we have." *THE TWENTY NINTH DAY*, p.320

"Faust, having made a mad bargain by not reading the fine print and so brought disaster on the innocent bystanders (Gretchen's family), was eventually redeemed and accepted in heaven because he changed his career, rededicating his talents to bringing soft technologies to the villagers. We need, like Faust, to refashion hubris into humility; to learn and accept our own limits as a fragile and tenuous experiment in an inhospitable universe; and to grow content to live as people, not as gods." *SOFT ENERGY PATHS*, p.170

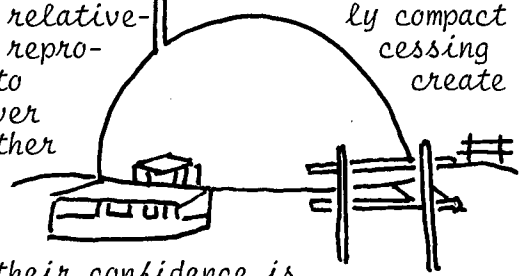
"To use a possible metaphor, technology was the key that unlocked the door to 'progress.' A key reflects the design of the lock it has been made to open; to open a different door requires a different-shaped key." *THE POLITICS OF ALTERNATIVE TECHNOLOGY*, p.93

"The social values that fuel a high-energy society are all too apparant today. Those that could make a low-energy society succeed are deeply rooted

- *RAY'S OF HOPE* "The Transition to a Post-Petroleum World" by Denis Hayes, 1977 (W.W. Norton & Co., Inc., New York, N.Y.) 240 pages.
- *THE TWENTY NINTH DAY* "Accommodating Human Needs and Numbers to the Earth's Resources" by Lester R. Brown, 1978 (W.W. Norton & Co., Inc., New York, N.Y.) 363 pages.
- *THE POLITICS OF ALTERNATIVE TECHNOLOGY* by David Dickson, 1974 (Universe Books, New York, N.Y.) 224 pages.
- *NON-NUCLEAR FUTURES* "The Case for an Ethical Energy Strategy" by Amory B. Lovins & John H. Price, 1975 (Ballinger Publishing Co., Cambridge, Ma.) 223 pages.
- *SOFT ENERGY PATHS* "Toward a Durable Peace" by Amory B. Lovins, 1977 (Ballinger Publishing Co., Cambridge, Ma.) 231 pages.
- *WORLD ENERGY STRATEGIES* "Facts, Issues, and Options" by Amory B. Lovins, 1975 (Ballinger Publishing Co., Cambridge, Ma.) 131 pages.

in many cultures, but may need to be rescued from societal attics and dusted off. What happened to thrift? to neighbourliness? to craftsmanship? to the notion that esteem is merited more by conspicuous simplicity than by conspicuous consumption? Recycling such values could help us to achieve (as Daly puts it) growth in things that really count, rather than in things that are merely countable." *WORLD ENERGY STRATEGIES*, p.102

"Persons charged with the isolation of the relatively compact but extremely toxic wastes arising in fuel reprocessing seem confident that they will devise ways to create a perpetually closed system - something never before accomplished in the management of other hazardous substances, particularly those that can be biologically reconcentrated by orders of magnitude per trophic level once released. Such persons further state that their confidence is sufficient basis to warrant rapid expansion of nuclear power." *NON-NUCLEAR FUTURES*, p.33



"The basic flaw in the fifty-fifty agreements, which had looked so neat, was now very evident. They were like plans to give factory workers a shareholding in a company - fine when profits were booming, explosive when they were slumping. The companies managed to create the impression that their profits were falling dangerously low, but in fact they were still able to pay for their vast expansion from the profits from Middle East oil." *THE SEVEN SISTERS*, p.187

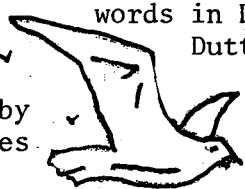
"It is here, however, that we come back upon that place of numerous crossroads where man has lifted the lantern of his intellect hopefully to many ambiguous if not treacherous sign posts. There is, we know now to our sorrow, more than one world to be drawn out of nature. When once drawn, like some irreplaceable card in a great game, that world leads on to others. Bacon's 'second world' becomes a multiplying forest of worlds in which man's ability to choose is subdued to frightened day-to-day decisions." *THE NIGHT COUNTRY*, p.134

"On the flat surface of this tilted slab somebody, maybe a Mormon cowboy fifty years ago, maybe an Indian eight hundred years ago, has chiseled two converging grooves which catch some of the falling water and conduct it to a carved spout at the lower edge. The grooves are well worn, smooth as a pebble to the touch. As I sit there drinking water from cupped hands, I happened to look up and see on the opposite wall, a hundred feet above the floor of the canyon, the ruins of three tiny cliff dwellings. The erosion of eight centuries has removed whole blocks of rock which formerly must have supported ladders and handholds, making the ghost village now inaccessible." *DESERT SOLITAIRE*, p.201



"For centuries we have dreamed of intelligent beings throughout this solar system. We have been wrong; the earth we have taken for granted and treated so casually - the sunflower-shaded forest of man's infancy - is an incredibly precious planetary jewel.

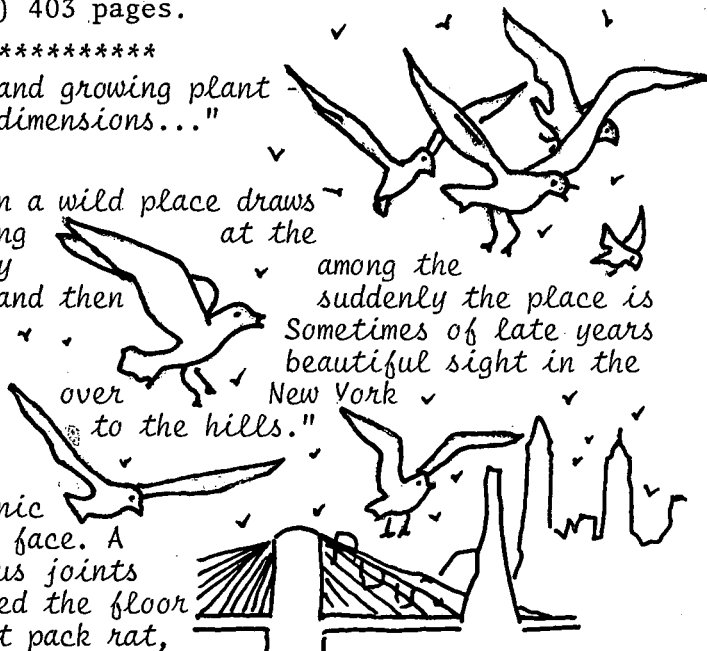
- *THE POVERTY OF POWER* by Barry Commoner, 1977 (Bantam Books, New York, N.Y.)
- *A GUIDE FOR THE PERPLEXED* by E.F. Schumacher, 1978 (Harper Colophon Books, New York, N.Y.) 147 pages.
- *SMALL IS BEAUTIFUL* "Economics as if People Mattered" by E.F. Schumacher, 1975 (Harper & Row, Publishers, Inc., New York, N.Y.) 305 pages.
- *A CONTINUOUS HARMONY* "Essays Cultural and Agricultural" by Wendell Berry, 1975 (Harcourt Brace, New York, N.Y.) 182 pages.
- *SONG OF THE EARTH SPIRIT* by Susanne Anderson, nd (Ballantine Books, New York, N.Y.) 126 pages.
- *THE NIGHT COUNTRY* by Loren Eiseley, 1971 (Charles Scribner's Sons, New York, N.Y.) 240 pages.
- *THE INVISIBLE PYRAMID* "A Naturalist Analyses the Rocket Century" by Loren Eiseley, 1970 (Charles Scribner's Sons, New York, N.Y.) 173 pages.
- *THE IMMENSE JOURNEY* "The Mysteries of Man and Nature" by Loren Eiseley, 1959 (Vintage Books, New York, N.Y.) 210 pages. ✓
- *DESERT SOLITAIRE* "A Season in the Wilderness" by Edward Abbey, 1977 (Ballantine Books, New York, N.Y.) 303 pages. ✓
- *THE JOURNEY HOME* "Some words in Defense of the American West" by Edward Abbey, 1977 (E.P. Dutton, New York, N.Y.) 242 pages. ✓
- *THE MONKEY WRENCH GANG* by Edward Abbey, 1976 (Avon Books, New York, N.Y.) 387 pages. ✓
- *CREATING ALTERNATIVE FUTURES* by Hazel Henderson, 1978 (Berkeley Publishing Corp., Berkeley, Ca.) 403 pages. ✓



 We are all of us - man, beast, and growing plant -
 aboard a space ship of limited dimensions..."
THE INVISIBLE PYRAMID, p.152

"A cabin going back to nature in a wild place draws
 them till they come in, listening at the
 eaves, I imagine, pecking softly among the
 shingles till they find a hole and then suddenly the place is
 theirs and man is forgotten. Sometimes of late years
 I find myself thinking the most beautiful sight in the
 world might be the birds taking over New York
 after the last man has run away to the hills."
THE IMMENSE JOURNEY, p.187

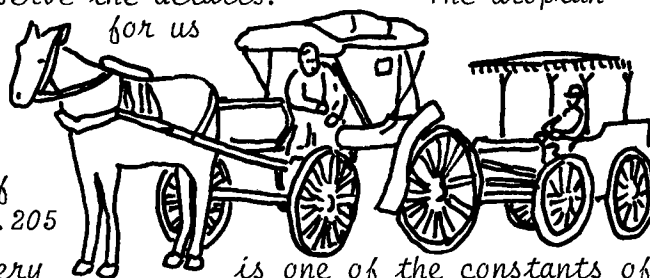
"Dust. Spider webs. The allergenic
 Russian thistle in front of his face. A
 layer of juniper twigs and cactus joints
 sprinkled with tiny turds covered the floor
 under his belly - some provident pack rat,



years before, had left this behind. Waiting, not patiently, palms sweaty and stomach sick with fear, Hayduke watched a pair of ants climb up the barrel of his revolver. Where'd they come from? The ants clung to the front sight. Before he could flick them off they crawled down the sight and disappeared into the bore. Now there's a place to hide. What would they make of the groovy rifling and the hollow-pointed bulge of lead blocking the end of the tunnel?" *THE MONKEY WRENCH GANG*, p.239

"Walking takes longer, for example, than any other known form of locomotion except crawling. Thus it stretches time and prolongs life. Life is already too short to waste on speed. I have a friend who's always in a hurry; he never gets anywhere. Walking makes the world much bigger and therefore more interesting. You have time to observe the details. The utopian

technologists foresee a future in which distance is annihilated and anyone can transport himself anywhere, instantly. Big deal, Buckminster. To be everywhere at once is to be nowhere forever, if you ask me." *THE JOURNEY HOME*, p.205



"In reality, this despised drudgery is one of the constants of life, like water only changing its form in response to changes of atmosphere. Our aversion to the necessary work that we call drudgery and our strenuous efforts to avoid it have not diminished it at all, but only degraded its forms." *A CONTINUOUS HARMONY*, p.116

"As such lifestyle changes are mandated by declining energy and resource availability, some corporations may not survive the shifting patterns and may follow the buggy-whip makers into oblivion. Others equally heavily dependent on resource-intensive consumption may have the political power to force the taxpayers to bail them out in the manner that several aerospace, airline and utility companies are attempting today." *CREATING ALTERNATIVE FUTURES*, p.346

"Experimentation is a valid and legitimate method of study only when it does not destroy the object under investigation. Inanimate matter cannot be destroyed; it can only be transformed. Life, consciousness, and self-awareness, on the other hand, are damaged very easily and almost invariably destroyed when the element of freedom inherent in these three powers is assumed to be nonexistent." *A GUIDE FOR THE PERPLEXED*, p.102

"It is only when we can see the world as a ladder, and when we can see man's position on the ladder, that we can recognise a meaningful task for man's life on earth." *SMALL IS BEAUTIFUL*, p.96

"The strength of the earth is my strength; The thoughts of the earth are my thoughts; The voice of the earth is my voice." "The feather of the earth is my feather; All that belongs to the earth belongs to me; All that surrounds the earth surrounds me." "I, I am the sacred words of the earth. It is lovely indeed, it is lovely indeed." *SONG OF THE EARTH SPIRIT*, pp.122-126

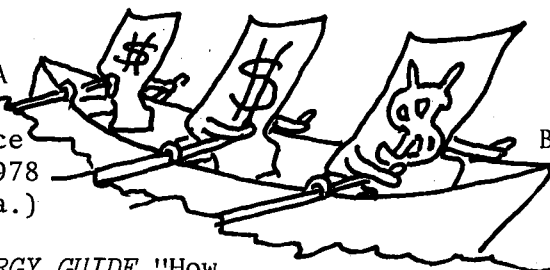
"Both national planners and foreign aid agencies need to incorporate concern for the preservation of biological diversity into their decisions. Endangered species are too often solely the province of scientists, while economists and politicians go about their work oblivious to the hidden



ecological costs of agricultural, forestry, and other development schemes. Regional development plans need to include provision for the protection of natural diversity from the beginning." *DISAPPEARING SPECIES*, p.29

"In the United States, the St. Lawrence Seaway has contributed significantly to the economic growth of the Great Lakes region. Yet it has done so at a high and largely unforeseen cost to the environment. The completion of the Welland Canal let the predatory sea lamprey into the Great Lakes. Trout, which had been the backbone of the lakes' fishing industry, suffered greatly from the lamprey invasion by the mid-1950's, and some other large, commercial predatory fish were nearly extinct." *THE AMERICAN ENVIRONMENT*, p.256

- *KEEPING WARM FOR HALF THE COST* "The Complete Guide to Home Insulation" by Phil Townsend & John Colesby, 1975 (Prism Press, Dorset, England) 90 pages.
- *OPPORTUNITIES FOR ENERGY CONSERVATION*, Vol. 3 of *California Energy Trends and Choices*, the 1977 Biennial Report of the State Energy Commission; 176 pages.
- *ENERGY MANAGEMENT "A Conservation for Facility,"* a Lawrence Report, LBL-7813, 1978 (University of California, Berkeley, Ca.)
- *THE HOMEOWNER'S ENERGY GUIDE "How to Beat the Heating Game"* by John A. Murphy, 1976 (Thomas Crowell Co., New York, N. Y.) 215 pages.
- *HOMEOWNER'S GUIDE TO SAVING ENERGY "How to Save Big Money on Home Heating, Cooling, Appliance and Electricity Costs!"* by Billy L. & James T. Price, 1977 (Tab Books, Blue Ridge Summit, Pa.) 288 pages.
- *DISAPPEARING SPECIES: THE SOCIAL CHALLENGE*, *Worldwatch Paper #22* by Erik Eckholm, July 1978 (Worldwatch Institute, Washington, D.C.) 38 pages.
- *THE AMERICAN ENVIRONMENT "Readings in the History of Conservation"* by Roderrick Nash, 1976 (Addison-Wesley Publishing Co., Menlo Park, Ca.) 364 pages.



Program of Energy
the Community College
Berkeley Laboratory
(University of Cali-
about 100 pages.

"At the rate our energy dollars are leaving this country, we will most likely be headed for more serious economic problems in the future. The unbalanced payment of money, be it goods, technology, or cash, is certainly tipping the scales against our country." *THE HOMEOWNER'S ENERGY GUIDE*, p.123

"The burden of proof should be on the power plant project proponents to demonstrate that additional generating capacity will produce greater net benefits - when the full social, economic and environmental costs are compared with those of feasible alternatives, including greater conservation and efficiency efforts." *OPPORTUNITIES FOR ENERGY CONSERVATION*, p.9

"There is no doubt that rooms with double-glazed windows are thermally more comfortable than those without. Cold areas around a window can send a

chill down your spine as you cross the other." *KEEPING WARM FOR HALF*

"As a general rule, if the humidity will be more than 30% on any day that you plan to use your air conditioner, it will be more economical to close up the morning." *HOMEOWNER'S GUIDE TO SAVING ENERGY*, p.207



from one side of a room to *THE COST*, p.73

midity of the outside air whenever possible, except in localities where water contains concentrations of heavy metals. Although cold water is desirable for some kinds of cooking, a water heater uses less energy than a rangetop to heat the same amount of water." *ENERGY MANAGEMENT, Sec.I.*

"Use hot tapwater for cooking whenever possible, except in localities where water contains concentrations of heavy metals. Although cold water is desirable for some kinds of cooking, a water heater uses less energy than a rangetop to heat the same amount of water." *ENERGY MANAGEMENT, Sec.I.*

- *GARBAGE IN AMERICA: APPROACHES TO RECYCLING* by Neil N. Seldman, 1975 (Institute for Local Self-Reliance, Washington, D.C.) 49 pages.
- *CALIFORNIA RECYCLING CONVENTION PROCEEDINGS OCT.9,10,11, 1973*, by Richard D. Evans & John Van Daam, Editors, 1974 (Ecology Center, Inc., Berkeley, Ca.) 269 pages.
- *REPAIRS, REUSE, RECYCLING - FIRST STEPS TOWARD A SUSTAINABLE SOCIETY*, *World-watch Paper #23* by Denis Hayes, September 1978 (Worldwatch Institute, Washington, D.C.) 45 pages.

"The garbage problem in our cities is primarily one of attitude, not of technology. We must approach the waste problem by, first, eliminating as much of it at its source, in the manufacturing process, as possible, and second, recycling the rest for use in local production facilities as much as is feasible." *GARBAGE IN AMERICA*, p.28

"It is impossible for our present economy to react in a rational manner to resource shortages. The difficulty lies not so much with the industrial sector ('the polluters') as with the institutions of finance, regulation, and ownership. It has been obvious for many years that the fundamental expectation of increasing exploitability by increasing numbers of people was not a long term possibility. But we have been unable to evaluate what organizational changes such fundamental errors in our society foundation require." *CALIFORNIA RECYCLING CONVENTION PROCEEDINGS*, p.59

"We are now approaching an era in which oil will cost \$20 per barrel and several resources will begin to grow scarce. This will necessarily prompt some changes in the way we do things and perhaps some changes in the choice of things we do. In some cases, these changes will involve no more than the substitution of intelligence for materials. New approaches to old problems will yield solutions that require materials to perform a different function. For example, adhesives can be substituted for nuts and bolts in joining two materials together." *REPAIRS, REUSE, RECYCLING*, p.37

For more on doing better with what we have, see chapters in: *MIAMI CONFERENCE PROCEEDINGS*; *NEW LOW-COST SOURCES OF ENERGY FOR THE HOME*; *ALTERNATIVE SOURCES OF ENERGY*;



ALTERNATIVE NATURAL ENERGY SOURCES; MAN, ENERGY & SOCIETY; CLOUDBURST; PERSPECTIVES ON ENERGY; RAYS OF HOPE; TWENTY-NINTH DAY; OTHER HOMES & GARBAGE; ENERGY WE CAN LIVE WITH; RADICAL TECHNOLOGY; KILOWATT COUNTER; SPECTRUM; RAINBOOK; and ENERGY BOOK #2.

"These were recommended to us by an old, experienced beekeeper who began long before the time of the commercially available comb foundations. One approach from that time period also relied on movable frames. The top portion of each frame has pieces of comb cut from a natural hive and tied in place with string. The bees will extend the comb to fill each frame. The string should be cut within the first few days as soon as they are no longer necessary, or the bees will waste considerable effort in cutting it themselves." *APPROPRIATE TECHNOLOGY SOURCEBOOK*, no page number.

"And we lessen the soul of all places to which we go, and ourselves as well, when we take without giving and come to them without reverence to life and to land, to people and to place, to ourselves and to the creation of which we are a part." *RAINBOOK*, p.133

- *THE UPDATED WHOLE EARTH CATALOG* "Access to Tools" by staff & users, 1974 (Whole Earth Catalog, Menlo Park, Ca.) 448 pages.
- *WHOLE EARTH EPILOG* "Access to Tools" by staff & users, 1974 (Penguin Books, Baltimore, Md.) 318 pages.
- *APPROPRIATE TECHNOLOGY SOURCEBOOK* "For tools & techniques that use local skills, local resources, & renewable sources of energy" by Ken Darrow & Rick Pam, 1976 (Volunteers in Asia, Stanford, Ca.) 304 pages.
- *HOMEGROWN ENERGY* "Finder's Guide No. 4" by Gary Wade and Michael & Susan Hartmann, 1976 (Charles Scribner's Sons, New York, N.Y.) 150 pages.
- *ALTERNATIVE AMERICA* "A Directory of Groups & Organizations" by Richard Gardner, 1976 (Self-printed, Cambridge, Ma.) about 100 pages.
- *ALTERNATIVE NATURAL ENERGY SOURCES* "In Building Design" by Albert Davis & Robert Schubert, 1976 (Van Nostrand Reinhold Co., New York, N.Y.) 251 pages.
- *SPECTRUM, AN ALTERNATE TECHNOLOGY EQUIPMENT DIRECTORY*, Eugene Eccli, Ed., 1975 (ECM & Princeton Publishers, Princeton, Mn.) 64 pages.
- *RAINBOOK* "Resources for Appropriate Technology" by the Editors of *Rain*, 1977 (Schocken Books, New York, N.Y.) 251 pages.
- *SOFT-TECH*, J. Baldwin & Stewart Brand, Editors, 1978 (Penguin Books, New York, N.Y.) 175 pages.

"Some of us in our jobs are trying to answer the questions of today and

tomorrow, and very often, we find that the urgent is replacing the essential. ...The Indian Chief Seattle used to say that 'whatever befalls the earth will befall the sons of the earth.'" *SOFT-TECH*, p.166 (from a speech by Pierre Elliot Trudeau)

"Your minds are filled with thoughts of other people and other places, of experience that has already happened or that you are waiting on to hap- pen, or that you wished had happened or pen, or that you wished had happened or would happen. This is very common. ...And it is most waste- ful, and actually harm- ful, destructive way to conduct your mental life." *THE UP-*

"I believe that we must put more into life than we take from it. At first this may seem to be defying some natural law. But I don't think so. I believe I give more than I get, and it works for me. Most every day is a pleasure. I enjoy my life. This is cause I try to live cooperatively, and am constantly re- by people who appreciate me and the way I am." *ALTER-*

"To be a good craftsman one needs ledge of a variety of techniques and judge which techniques are best and to draw upon for ideas. Creativity is

- *THE NICHOLSON SOLAR ENERGY CATALOGUE* Nick Nicholson & Bruce Davidson, 1977 (Renew-able Energy Publications, Ltd., Canada) about 160 pages.

- *FARMING "Sources for a Social & Ecologically Accountable Agriculture"* by Henry Ebenshade, 1976 (an Alternative Resources Project, Davis, Ca.)

- *TOOLS FOR AGRICULTURE "A Buyer's Guide to Low-Cost Agricultural Implementations"* compiled by John Boyd, 1976 (Intermediate Publications, Ltd., London) 173 pages.

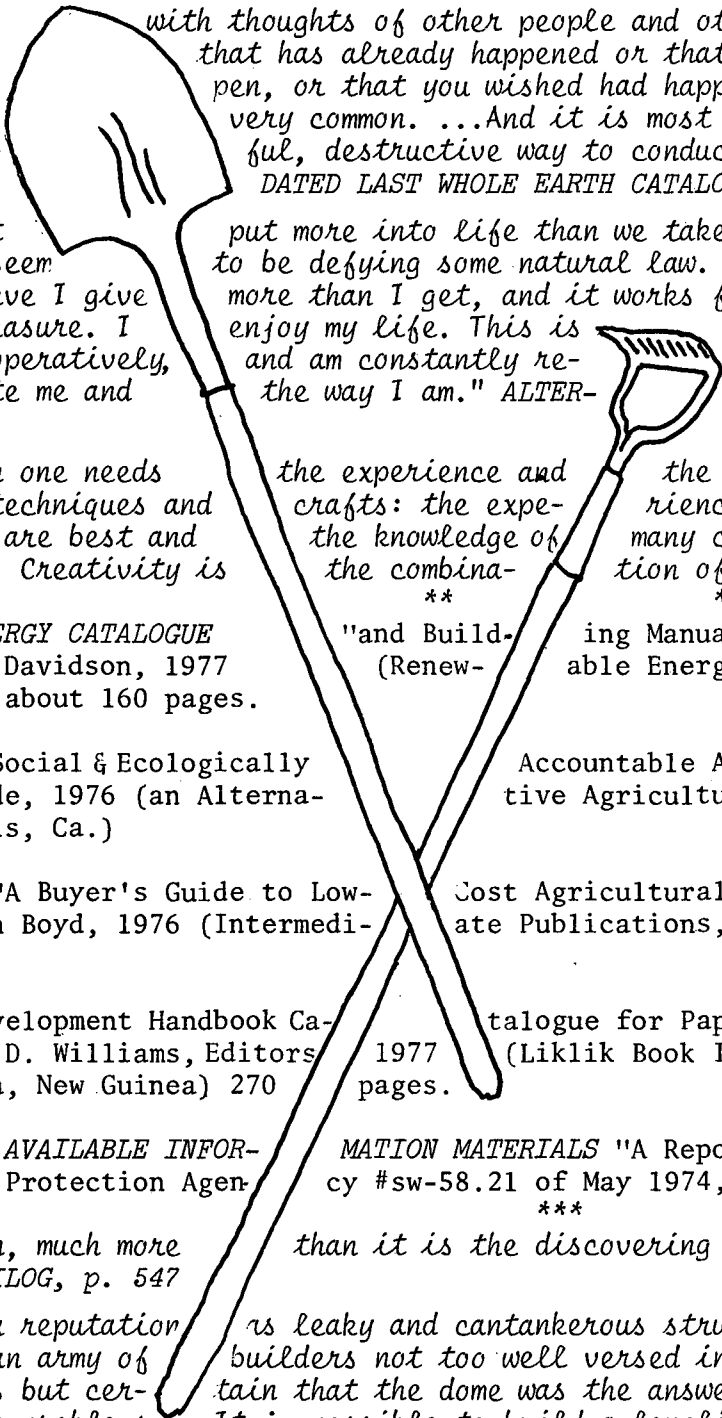
- *LIKLIK BUK "A Rural Development Handbook Catalogue for Papua New Guinea,"* P.R. Hale & B.D. Williams, Editors 1977 (Liklik Book Information Center, Lae, Papua, New Guinea) 270 pages.

- *SOLID WASTE MANAGEMENT AVAILABLE INFORMATION MATERIALS "A Report of the U.S. Environmental Protection Agency #sw-58.21 of May 1974, 42 pp.*

idea in a novel fashion, much more ideas." *WHOLE EARTH EPILOG*, p. 547

"Domes have picked up a reputation as leaky and cantankerous structures, due to the efforts of an army of builders not too well versed in basic construction techniques but cer- tain that the dome was the answer to all the world's housing problems. It is possible to build a longlife, weather-tight shelter at a relatively low cost/ft² using a dome." *SPECTRUM, AN ALTERNATE TECHNOLOGY EQUIPMENT DIRECTORY*, p.53

"Vegetation can also provide an accurate indicator of long term wind velocities. In one particular case, balsam firs indicated wind velocity by a

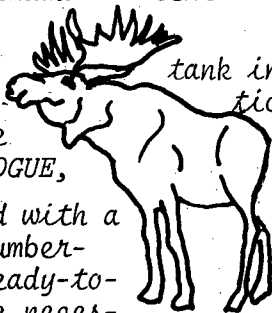


progressive deformity." *ALTERNATIVE NATURAL ENERGY SOURCES*, p.104

"The benefits of such certification programs have been widely acclaimed as a result of marked increases in farm production, buyer confidence, and flow of organic food products. ...The basic aim of such programs is to protect both the farmer and the consumer from fraudulent marketing practices." *FARMING*, p.58

"Seeing the snow melt over the septic tank in the front of my own house prompted me to install the septic tank for Solar II under the greenhouse in order to utilize the escaping heat." *THE NICHOLSON SOLAR ENERGY CATALOGUE*, Section 6., p.4

"This little compact attachment combined with a chain saw converts the two tools into a single precision lumber-making mill. With this MINI-MILL anyone can make smooth ready-to-use dimensional lumber from logs. No special talents are necessary." *LIKLIK BUK*, p.143

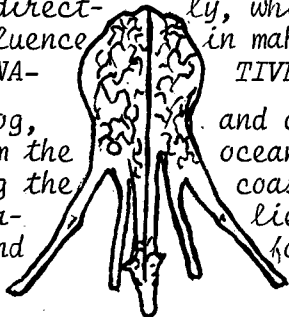


- *THE NEW YORK TIMES ENCYCLOPEDIA DICTIONARY OF THE ENVIRONMENT* by Paul Sar-noff, 1973 (Equinox Books, New York, N.Y.) 352 pages.
- *SAN FRANCISCO BAY AREA DIRECTORY OF ENVIRONMENTAL ACTIVISTS* by the Ecology Center of Berkeley, 1976 (Assn. of Bay Area Governments, Berkeley, Ca.) 40 pages.
- *STATE DIRECTORY OF ENERGY CONSULTING SERVICES* by the Faculty of the Cali-fornia State University & Colleges, 1978 (A.F.S. Printing, Anaheim, Ca.) 111 pages.

"DOE will weigh the recommendations from states quite heavily in funding the projects in appropriate technology. The states will base those recom-mendations on technical and peer reviews. The state constitutes the peer review panel. The peer review will actually be the most important step in the process to ensure funding specific technologies." *DOE ROLE IN SUPPORT OF SMALL-SCALE APPROPRIATELY DISTRIBUTED TECHNOLOGY*, p.143

"Each energy system in use today benefits from government subsidies, di-rectly or indirect-ly, which are generally not recognized for their powerful influence in making an energy technology 'economic.'" *STA-TUS OF ALTERNA-TIVE ENERGY TECHNOLOGIES*, p.5

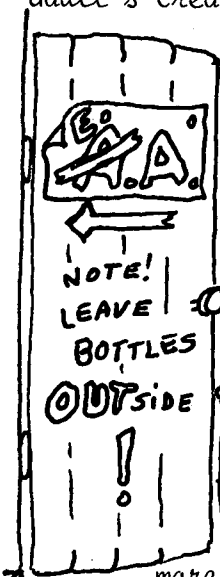
"Sunshine, fog, and clouds depend a great deal on topography and distance from the ocean. Low clouds are common at night and in the morning along the coast during spring and summer, but form later and clear ear-lier near the foothills so that average annual cloudiness and fog frequencies are greatest near the ocean, and sunshine totals are highest on the inland side of the City." *CALIFORNIA SOLAR DATA MANUAL*, pp.196-197



- *THE MOTHER EARTH NEWS*, a periodical, Issue No.36-Nov.,1975 (Self-published in Henderson, N.C.) A subscription is on order.
- *DOE ROLE IN SUPPORT OF SMALL-SCALE APPROPRIATELY DISTRIBUTED TECHNOLOGY*, "Official Transcript of Public Briefing and Addendum, Jan.26,1978," (U.S. Dept. of Energy, Washington, D.C.) 151 pages.

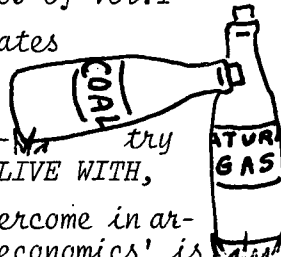
- *STATUS OF ALTERNATIVE ENERGY TECHNOLOGIES*, Vol. 5 of *California Energy Trends and Choices*, the 1977 Biennial Report of the State Energy Commission; 123 pages.
- *DISTRIBUTED ENERGY SYSTEMS IN CALIFORNIA'S FUTURE: Interim Report*, Vols. I & II, March 1978 (LBL Report 6831 revised) I = 287 pages & II = 359 pages.
- *ENERGY WE CAN LIVE WITH* "Approaches to Energy that Are Easy on the Earth & Its People," Daniel Wallace, Ed., 1976 (Rodale Press, Emmaus, Pa.) 150 pages.
- *HANDBOOK OF HOMEMADE POWER* by the *Mother Earth News* staff, 1974 (Bantam Books, New York, N.Y.) 374 pages.
- *MIAMI INTERNATIONAL CONFERENCE ON ALTERNATIVE ENERGY SOURCES: PROCEEDINGS OF CONDENSED PAPERS*, T. Nejat Veziroglu, Ed., for the Clean Energy Research Inst., University of Miami, 1977 (Miami U., Coral Gables, Fl.) 902 pages.

"Udall's Credo: ...Mr. Udall believes every American should have: The right to clean water - and the duty not to pollute it. ..The right to clean air - and the duty not to befoul it. ..The right to surroundings - free from man-made ugliness - and the duty not to blight. ..The right of easy access to beauty and tranquility - and the duty to preserve such places unspoiled. ..The right to enjoy plants and animals in their natural habitat - and the duty not to eliminate them from the face of the earth." *NEW YORK TIMES ENCYCLOPEDIA DICTIONARY OF THE ENVIRONMENT*, p. 321



"Despite our assumed water constraint, California still has a large energy farm potential. In particular, California's non-commercial forests and brush land can be harvested in an environmentally benign manner to produce an annual energy crop." *DISTRIBUTED ENERGY SYSTEMS IN CALIFORNIA'S FUTURE*, p. 89 of Vol. I

"United States energy consumption will more than double by the year 2000, and almost half of that energy will be wasted." (Daniel Wallace); "First, America is a country of energy drunkards." (Robert Rodale): *ENERGY WE CAN LIVE WITH*,



energy consumption will by the year 2000, and almost half of that energy will be wasted." (Daniel Wallace); "First, America is a country of energy drunkards." (Robert Rodale): *ENERGY WE CAN LIVE WITH*,

"One of the major hurdles to overcome in arriving at energy policy is the narrow limits by which 'economics' is defined. In this narrow definition of what is economic, no concern is given to the adverse effects of the development of a particular technology. Increased power consumption is directly relatable to the 'standard of living' as we presently measure it, but it is independent of the quality of life." *NATURAL ENERGY WORKBOOK #2*, p. 121



- *CALIFORNIA SOLAR DATA MANUAL* by P. Berdahl, D. Grether, M. Martin, & M. Wahlig, March 1978 (LBL & California Energy Commission, Ca.) 318 pages.

"One scheme for a local, nonprofit solar company might look like this: Each not-for-profit company would be owned by everyone living in its sales area - that is, by the potential customers of its locally sold products." *NEW*

ENERGY, p.171

"Incidentally, the glass this plant will make will be slightly green and will have little tiny bubbles in it, because it seems pointless to import arsenic and various other trace elements, which are extremely expensive and are only used to clarify the glass. I was interested to see that major stores are actually selling, as a curiosity, bottles made of green glass with little bubbles in them at \$3.50 each." INTRODUCTION TO APPROPRIATE TECHNOLOGY, p.159

" The only re- and interna-plex inter-fits are but must become an in-ments in the years widen the gulf between p.23

relationship between technology and equity has recently become a matter of concern to governments tional lending institutions, however; and the com-actions between technical change and social bene-dimly understood. Nevertheless, social equity creasingly important criterion in public invest-ahead or the choice of technologies will only rich and poor." SOFT TECHNOLOGIES, HARD CHOICES,

- NATURAL ENERGY WORKBOOK # 2 "Energy Independence Through Economic Conversion, Efficient Utilization, and Conservation of Local Resources" by Peter Clark with Judy Landfield, 1976 (Visual Purple, Berkeley, Ca.,) 128 pp.
- PRODUCING YOUR OWN POWER "How to Make Nature's Energy Sources Work for You," Carol H. Stoner, Ed., 1975 (Vintage Books, New York, N.Y.) 322 pp.
- NEW ENERGY "Understanding the Crisis and a Guide to an Alternative Energy System," an Institute for Policy Studies Book by James Ridgeway & Bettina Conner, 1975 (Beacon Press, Boston, Ma.) 224 pages.
- NEW LOW-COST SOURCES OF ENERGY FOR THE HOME "With Complete Illustrated Catalog" by Peter Clegg, 1976 (Garden Way Publishing, Charlotte, Vt.) 252 pages.
- INTRODUCTION TO APPROPRIATE TECHNOLOGY "Toward a Simpler Life-Style," R.J. Congdon, Ed., 1977 (Rodale Press, Emmaus, Pa.) 205 pages.
- SURVIVAL SCRAPBOOK #3 "Basic ways to decrease energy dependence" by Stefan A. Szczeikun, 1974 (Schocken Books, New York, N.Y.) about 150 pp.

"Modern society is highly interconnected. These interconnections provide diverse, deceptively stable support elements for human activities. But the connections will prove incomplete and vulnerable as the structure and fabric of modern societies fail to be adaptive. The energy, fuel and fertilizer crises have revealed the frail nature of the links connecting the vital support elements of the industrial world" THE JOURNAL OF THE NEW ALCHEMISTS, p.86

"To sum up, there are two fundamental limits on what we can do with energy. First, you can never have more or less than



- *OTHER HOMES AND GARBAGE* "Designs for Self-Sufficient Living" by J. Leckie, G. Masters, H. Whitehouse, & L. Young, 1975 (Sierra Club Books, San Francisco, Ca.) 302 pages.
- *JOURNAL OF THE NEW ALCHEMISTS*, 1977 (The New Alchemy Institute, Woods Hole, Ma.) 148 pages.
- *PROGRESS AS IF SURVIVAL MATTERED* "A Handbook for a Conserver Society" by Friends of the Earth, Hugh Nash, Ed., 1977 (Friends of the Earth, San Francisco, Ca.) 319 pages.
- *SOFT TECHNOLOGIES, HARD CHOICES*, *Worldwatch Paper #21* by Colin Norman, June 1978 (Worldwatch Institute, Washington, D.C.) 48 pages.
- *ENERGY BOOK - 2* "More Natural Sources & Backyard Applications," John Prenis, Ed., 1977 (Running Press, Philadelphia, Pa.) 125 pages.
- *ENERGY PRIMER* "Solar, Water, Wind, & BioFuels" by the Portola Institute, 1974 (Fricke-Parks Press, Inc., Fremont, Ca.) 200 pages.
- *ALTERNATIVE SOURCES OF ENERGY* "Practical Technology & Philosophy for a Decentralized Society," Sandy Eccli, *et al.*, Editors, 1975 (Seabury Press, New York, N.Y.) 279 pages.
- *ALTERNATIVE SOURCES OF ENERGY*, A Periodical, Nos. 11, 12, 13, 14, 15, 16, 18, 20, 21, 22, 27 (Alternative Sources of Energy, Inc., Milaca, Mn.)

 you started with.
 scatters some energy,
ENERGY BOOK - 2, p.11

"All animals are kept
 countryside by their
 is a lag time between
 and the time when their
 and bring their numbers
 p.123



 Second, every energy process
 which cannot be regained."

from overrunning the
 natural enemies..there
 peak numbers of pests
 enemies can respond
 down." *ENERGY PRIMER*

 For more material on the "soft stuff," in
 in pages 28-31, see chapters in: *ALTERNATIVE NATURAL ENERGY SOURCES; MAN, ENERGY & SOCIETY; SIMPLE LIVING; LIVING WITH ENERGY; PERSPECTIVES ON ENERGY; THE MOTHER EARTH NEWS; SOFT ENERGY PATHS; RAYS OF HOPE; KILOWATT COUNTER; CALIFORNIA ENERGY TRENDS & CHOICES; SUN, EARTH; RAINBOOK; NICHOLSON SOLAR ENERGY CATALOGUE.*

 "Rarely is sewage treatment carried so far that the effluent has no damaging effects on the natural systems into which it is released. Even more rarely are any of the valuable nutrients in the effluent returned to the earth in a usable form." *NEW LOW-COST SOURCES OF ENERGY FOR THE HOME*, p.164

"After killing off life on the ocean floor, the lead compounds, in low concentrations, would be metabolized by algae, whether growing on the bottom or drifting by as part of plankton. The poison would then progress right up

the food chain, from tiny crustaceans, worms, and larvae to fish, every link concentrating the poison until it ends up on our forks." *PROGRESS AS IF SURVIVAL MATTERED*, p.133

"Suffice it to say that pesticides have been used so much on farmlands and around cities (50% are used in cities) that they must now be considered an integral part of our biological systems: present in our bodies, flowing with the rivers, drifting in the air and falling with the rain." *ENERGY PRIMER*, p.123

"Persons who ingest contaminated foods suffer from radiation given off by disintegrating atoms, enzymes, vitamins and minerals necessary to health. As chromosomal damage increases, it is more likely that two parents will have the same damaged chromosomes, and their children will thus have the resulting defect for all generations." G.D. Rasmussen at the *MIAMI INTERNATIONAL CONFERENCE*, p.603

"Perhaps it is time to re-evaluate our indoor dress habits and to start weaving garments that insulate our bodies instead of merely decorating them. Maybe it is time for people to toughen up a little, to get our bodies in shape, to quit pampering ourselves psychologically, and to put on warmer clothes when relaxing around the house instead of cranking up the thermostat." *OTHER HOMES AND GARBAGE*, p.81

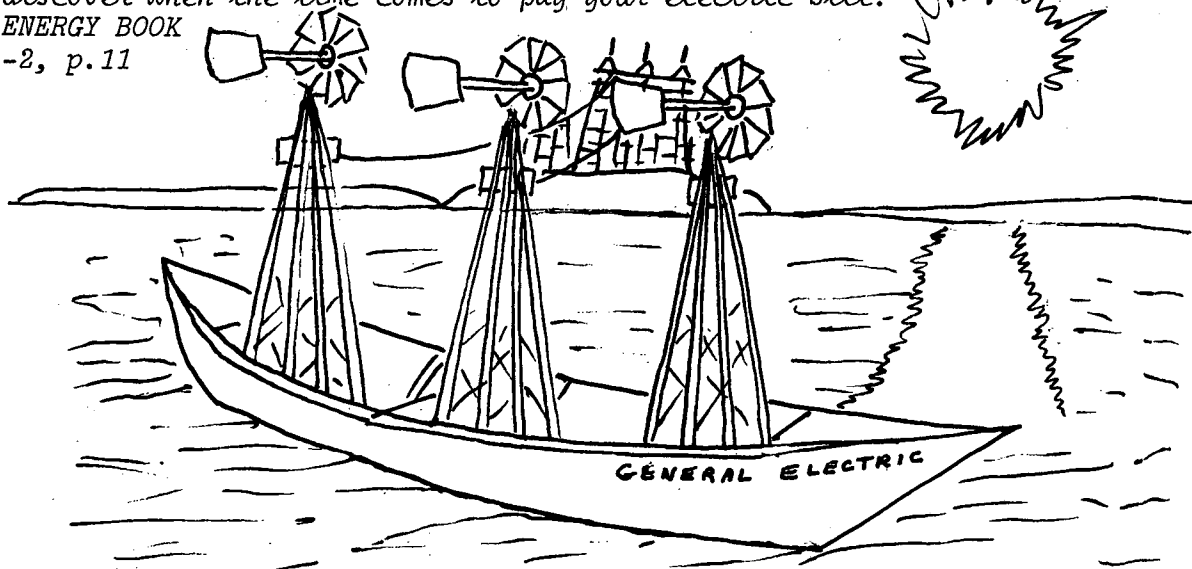
"A windbreak is a protective planting around one's house and garden, where-as a shelterbelt is a long, planted barrier protecting large fields." *PRODUCING YOUR OWN POWER*, p.128

"The movements of a tree in the wind are transferred to rotary mechanical power ... Simply by virtue of its size and power, which it can spare, when it does move there really is some force." *SURVIVAL SCRAPBOOK #3*, no page

"William Heronemus suggests batteries of windmills located offshore. These could not be seen from land, thus avoiding visual pollution." *ALTERNATIVE SOURCES OF ENERGY*, p.77

"Your refrigerator is a good example. It makes heat flow in the "wrong" direction, from the cold inside to the warm outside. ... as you discover when the time comes to pay your electric bill."

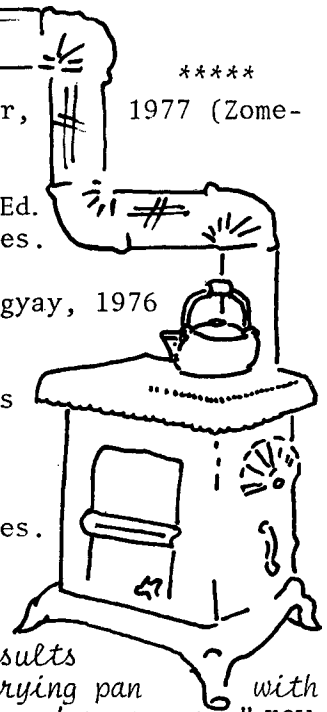
ENERGY BOOK
-2, p.11



"Use the stovepipe itself as a radiant heater, the way many pioneer builders did in New England, here in Ontario and elsewhere. In a single-storied structure, put the stove at one end of the building and carry the pipe horizontally to the other end and then out..." *HANDBOOK OF HOMEMADE POWER*, p.50

- *SUNSPOTS* "Collected Facts & Solar Fiction" by Steve Baer, 1977 (Zome-works Corp., Albuquerque, N.M.) 146 pages.
- *SUN!* "A Handbook for the Solar Decade," Stephen Lyons, Ed. 1978 (Friends of the Earth, San Francisco, Ca.) 364 pages.
- *SOLAR CONTROL AND SHADING DEVICES* by Aladar & Victor Olgyay, 1976 (Princeton U. Press, Princeton, N.J.) 200 pages.
- *SOLAR COOKER CONSTRUCTION MANUAL*, 1977 (VITA Publications Mt. Rainier, Md.) 18 pages.
- *HOW TO BUILD 100 SQUARE FEET OF SOLAR AIR COLLECTORS IN ONE DAY FOR \$200.00*, an anonymous publication of 10 pages.

"Imagine how useful a folding cooker like this would be for a skiing party! No matches, no firewood. Cook yourself a hearty lunch while the sun's shining." p.172 "Results with the Umbroiler showed it took 5 minutes to heat a frying pan blackened bottom and then another 5 minutes to fry eggs and sausages." *HOW TO BUILD A SOLAR HEATER*, p.173



"Though the cooker is not difficult to use once one is accustomed to it, it does require some instruction. Experience in Morocco indicates that learning to use it is about like learning to knit; therefore, one can probably not expect a 'natural' market to exist; one must be prepared to follow up manufacturing with personal introduction." *SOLAR COOKER*, p.2

For further reading in the kind of solar material covered in pages 33-34, see chapters in: *HANDBOOK OF HOMEMADE POWER*; *PRODUCING YOUR OWN POWER*; *NEW LOW-COST SOURCES OF ENERGY FOR THE HOME*; *MIAMI CONFERENCE PROCEEDINGS*; *THE MOTHER EARTH NEWS*; *ALTERNATIVE SOURCES OF ENERGY*; *ALTERNATIVE NATURAL ENERGY SOURCES*; *SIMPLE LIVING*; *BUILD IT BETTER YOURSELF*; *LIVING WITH ENERGY*; *SOFT-TECH*; *OTHER HOMES & GARBAGE*; *NATURAL ENERGY WORKBOOK #2*; *CALIFORNIA ENERGY TRENDS & CHOICES*; *PRODUCING YOUR OWN POWER*; *RADICAL TECHNOLOGY*; *VITA TECHNOLOGY HANDBOOK*; *SURVIVAL SCRAPBOOK #3*; *ENERGY FOR MAN*; *ENERGY FOR SURVIVAL*; *SPECTRUM*; *APPROPRIATE TECHNOLOGY SOURCEBOOK*; *NICHOLSON SOLAR ENERGY CATALOGUE*; *LIKLIK BUK*; *ENERGY PRIMER*; and *ENERGY BOOK #2*.

"If you are running a pressure system, you must use a storage tank built to operate under pressure. An oil drum and similar units do NOT qualify. They will deform and burst under pressure greater than 10 psi. An old hot water heater works well and is adaptable to a closed system." *HOT WATER*, p.16

"Air-type solar collectors avoid many of the problems of the liquid types. There is no freezing or boiling to worry about; they are cheaper to construct; and the air may be used directly without heat exchangers." *HOW TO*

BUILD 100 SQUARE FEET OF SOLAR AIR COLLECTORS IN ONE DAY FOR \$200.00, p.?

- *SOLAR ENERGY EXPERIMENTS* "For High School & College Students" by Thomas W. Norton, 1977 (Rodale Press, Emmaus, Pa.) 129 pages.
- *ERDA'S PACIFIC REGIONAL SOLAR HEATING HANDBOOK* by the Solar Energy Group of the Los Alamos Scientific Laboratory, 108 pages.
- *THE SKYLIGHT BOOK* by Al Burns, 1976 (Running Press, Philadelphia, Pa.) 111 pages.
- *HOW TO BUILD A SOLAR HEATER* "A Complete Guide to Building & Buying Solar Panels, Water Heaters, Pool Heaters, Barbecues, & Power Plants" by Ted Lucas, 1975 (Ward Ritchie Press, Pasadena, Ca.) 236 pages.
- *HOT WATER* "Solar Water Heaters & Stack Coil Heating Systems" by Scott & Chole Morgan and David & Susan Taylor, 1975 (Self-published, Santa Barbara, Ca.) 31 pages.
- *SOLAR ENERGY THERMAL PROCESSES* by John A. Duffie & William A. Beckman, 1974 (John Wiley & Sons, New York, N.Y.) 386 pages.
- *THE SOLAR ENERGY TIMETABLE*, *Worldwatch Paper #19* by Denis Hayes, April 1978 (Worldwatch Institute, Washington, D.C.) 40 pages.

"The most exciting solar-electric prospect is the photovoltaic cell, a simple device that generates electricity directly when sunlight falls on it, Photovoltaic cells have no moving parts, consume no fuel, and produce no bomb-grade materials. Fashioned from relatively abundant elements, they have long lifetimes, and require little maintenance. ...they are most sensibly used in a decentralized fashion - perhaps incorporated in the roofs of buildings..." *THE SOLAR ENERGY TIMETABLE*, p.27

"Once your skylight is installed it should be checked for leaks before you remove all your work materials from the job site. If you have a hose that reaches to the roof, using it is an excellent way to water-test your workmanship." *THE SKYLIGHT BOOK*, p.76

"The world and its life are literally submerged in a fluid sea of atmosphere wherein the thermal characteristics have a most important effect on the process of living. All creatures are subjected to the extremes of heat and coolness, but most animals are much better equipped than man to escape such impacts or counteract them biologically." *SOLAR CONTROL AND SHADING DEVICES*, p.19



"This experiment deals with the transfer and storage of solar heat in gravel. Gravel, such as from old creek beds, is inexpensive and convenient to handle. Its frictional resistance to air flow is low since the stones are rounded and smoothed from erosion. Stones from 1½ to 2 inches ..." *SOLAR ENERGY EXPERIMENTS*, p.68

"Gravity is the most beautiful of forces - it never sleeps; it never forgets you - it spends forever attempting to finally rank everything within its field-

heavier down, lighter up. While it is slowly shifting mountains or bringing rotten branches to the ground, it is also shaping clouds in the sky above them. It takes on the shortest and the longest jobs, holding the moon forever in its orbit or bringing down another raindrop." *SUNSPOTS*, p.74

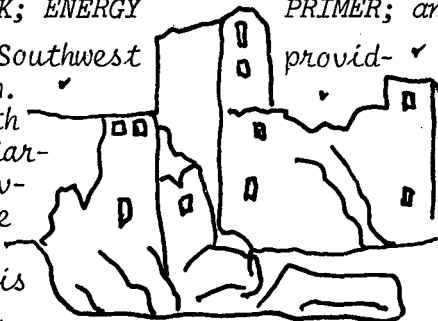
"According to Canadian Army men who have built and lived in similar snow houses (igloos) as part of their Arctic survival courses, when the outside temperature is -60°F and colder, their own body heat and the heat of the lamp are adequate to provide a temperature of 60° at the top of the dome, about 45° at the sleeping shelf, and close to zero at the floor." *SUN!* p.263

"In Japan, a large number of water heaters are built which combine the storage and collector in a single unit. For example, one design is comparable to a plastic air mattress... It is filled in the morning, and by the end of the day the water temperature has risen to the point where it is useful for evening domestic water needs." *SOLAR ENERGY THERMAL PROCESSES*, p.268

"Glass easily transmits shortwave radiation but is a poor transmitter of longwave radiation: once the sun's energy has passed through a sheet of glass and has been absorbed by a material behind it, the heat will not be reradiated to the outside. As a consequence, a glassed-in area exposed to the sun acts as a heat trap." *PASSIVE DESIGN IDEAS*, p.3-1

There are chapters on design in: *SUN, EARTH; NEW LOW-COST SOURCES OF ENERGY FOR THE HOME; ALTERNATIVE SOURCES OF ENERGY; SIMPLE LIVING; LIVING WITH ENERGY; SOFT-TECH; OTHER HOMES & GARBAGE; SPECTRUM; APPROPRIATE TECHNOLOGY SOURCEBOOK; RAINBOOK; ENERGY PRIMER; and ENERGY BOOK #2.*

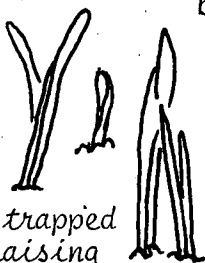
"The pueblos of the Southwest acting building form. at a faster rate with ty to buildings of lar- the means for reliev- energy problems. The pueblos was the mi- sional variation. This by the overall shape



provided some principles of inter- These principles, if applied today's technological abili- ger scale, ought to provide ing some of the pressing basis for equilibrium in the tigation of daily and sea- was partially accomplished of the buildings and partly

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- *ZOME PRIMER* "Elements of Zonohedra Geometry: Two & Three Dimensional Growth of Stars with Five Fold Symmetry" by Steve Baer, 1970 (Zomeworks Corp., Albuquerque, N.M.) 36 pages.
- *THE DYMAXION WORLD OF BUCKMINSTER FULLER* by R. Buckminster Fuller & Robert Marks, 1973 (Anchor Books, N.Y.) 246 pages.
- *DESIGN WITH NATURE* by Ian L. McHarg for the American Museum of Natural History, 1971 (Doubleday & Co., Inc., New York, N.Y.) 197 pages.
- *ENERGY AND FORM* "An Ecological Approach to Urban Growth" by Ralph L. Knowles 1977 (MIT Press, Cambridge, Ma.) 198 pages.
- *UNDERGROUND DESIGNS* by Malcolm Wells, 1977 (Published Underground, Cherry Hill, N.J.) 87 pages.
- *PASSIVE DESIGN IDEAS FOR THE ENERGY CONSCIOUS ARCHITECT* "A National Solar Heating & Cooling Information Center Publication" No date, about 50 pages.



trapped raising WITH NATURE, pp.117-118

by the structure, i.e., the selection and use of materials to enclose space." ENERGY AND FORM, p.135

"It is observed that the sunlight has been transmuted, with matter, from a lesser to a higher order. Some of the sunlight that otherwise would have been lost is now an ingredient of the plant. Some of the sun's energy had been en- on its path to entropy. This is defined as creation - the of matter from lower to higher order, negentropy." DESIGN

"Controlling the environment through domes offers the enormous advantages of the extraversion of privacy and the introversion of the community." THE DYNAMAXION WORLD OF BUCKMINSTER FULLER, p.234

"This Arcadian solar ziggurat just had to be tried. It was done for a visionary who wanted something 'everyone The only trouble was that the people the funding didn't want to talk to him one talks about it." UNDERGROUND DE-



would talk about.' who were in charge of about it, so now no SIGNS, p.68

"The geodesic dome, if it is large and es and joints, has many different edge cated in structure and simple in shape. structure and complicated in shape." ZOME

composed of many edge-lengths. It is compli- Zomes are simple in

PRIMER, p.3

For more on the alternative house itself, try: THE HOMEOWNER'S ENERGY GUIDE; MIAMI CONFERENCE PROCEEDINGS; ALTERNATIVE SOURCES OF ENERGY; ALTERNATIVE NATURAL ENERGY SOURCES; SIMPLE LIVING; LIVING WITH ENERGY; AUSTRALIAN TRADITIONAL BUSH CRAFTS; JOURNAL OF THE NEW ALCHEMISTS; RADICAL TECHNOLOGY; RAINBOOK; and NICHOLSON SOLAR ENERGY CATALOGUE.

"The personal effort and involvement required of the inhabitants of a passively heated house are often critical issues. For people weaned on the thermostat, even the simple activity of opening and closing shutters may be too much of an imposition on their lives. Others welcome this opportunity to participate in tempering their indoor climates." THE SOLAR HOME BOOK, p.115



"When the air inside a building rises and exhausts at the highest point, a pleasant natural ventilation and cooling effect can be achieved. The warm air that rises in the building and leaves at the top then can be replaced by cooler ground air. This 'thermal' chimney effect works well even in the absence of outside wind if roof and wall openings are properly sized and located. The Indian tepee makes ideal use of such devices for natural ventilation, control- bottom. The roof cu- oped to meet this BUILDING A SOLAR



lable by adjusting the openings at top and polas on traditional barns were devel- requirement as well." DESIGNING AND HOUSE, p.133

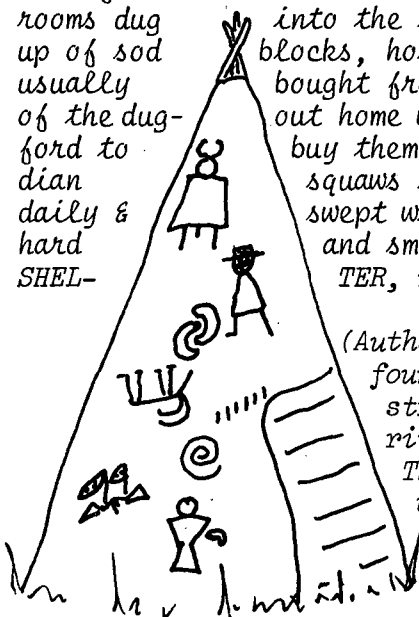
"A mixture of mulch frostline because it trate the mass of a ed by it. By tilting and soil can decrease the depth of the is an insulator. ...Sound cannot pene- berm and is either absorbed or reflect- the berm's surface, the sound is re- flected upward away from the building. Proper positioning and forming of berms will direct winds, causing snowdrifts to form away from buildings and

entrances." *SUN, EARTH*, p.138

"The entire Welliver family - Neil, his wife, Polly, and their four children - are aware that their energy supply is tuned to the weather conditions. 'Even the kids remember to turn out the lights behind them,' Neil notes. The steady whirring of the generator blades and the shadows they project on to the house are a source of satisfaction. 'The wind plant is 25 percent energy-producing and 75 percent pleasure,' he says. 'You feel like a kid with a giant pinwheel.'" *DESIGN FOR A LIMITED PLANET*, p.147

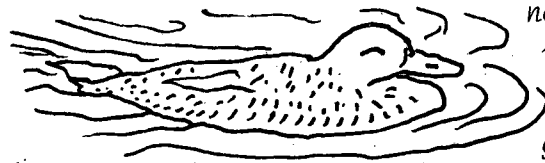
- *THE SOLAR HOME BOOK* "Heating, Cooling & Designing With the Sun" by Bruce Anderson with Michael Riordan, 1976 (Cheshire Books, Harrisville, N.H.) 297 pp.
- *LIVING WITH ENERGY* by Ronald Alves & Charles Milligan, 1978 (Penguin Books, New York, N.Y.) 128 pages.
- *DESIGN FOR A LIMITED PLANET* "Living with Natural Energy" by Norma Skurka & Jon Naar, 1976 (Ballantine Books, New York, N.Y.) 215 pages.
- *DESIGNING AND BUILDING A SOLAR HOUSE* "Your Place in the Sun" by Donald Watson, 1977 (Garden Way Publishing, Charlotte, Vt.) 281 pages.
- *SOLAR HOMES AND SUN HEATING* by George Daniels, 1976 (Harper & Row, Publishers, New York, N.Y.) 178 pages.
- *LOW-COST ENERGY-EFFICIENT SHELTER*, Eugene Eccli, Ed., 1976 (Rodale Press, Inc., Emmaus, Pa.) 408 pages.
- *THE OWNER-BUILT HOMESTEAD* by Ken Kern, 1975 (Owner Builder Publications, Oakhurst, Ca.) 268 pages.
- *THE OWNER-BUILT HOMESTEAD* "A How-To-Do-It Book completely updated & Revised" by Barbara & Ken Kern, 1977 (Charles Scribner's Sons, New York, N.Y.) 394 pp.

"The first and most desirable homes (American frontier) were simply small rooms dug up of sod usually of the dug-ford to dian daily & hard SHEL- into the south side of a low rolling hill. Walls were built blocks, holes being left for windows and doors, which were bought from the nearest town or railroad point. . . . The floor out home was of rough wooden planks if the family could afford to buy them; otherwise, it was treated as the neighboring In-squaws treated their tipi floors: sprinkled with water and swept with crude grass brooms until the surface was as smooth as finished concrete." *SURVIVAL SCRAPBOOK #1: TER*, no page numbers.



(Authors' note. The tipi is decorated with figures often found on rocks: petroglyphs. This reads: A large group of strong Indians were living at the confluence of the two rivers. The white man, evil because tricky, moved in. The Indians escaped safely up the mountain. The way was clear but many died from ruined, spoiled, or bad food. The rest starved to death. Original story, but LaVan Martineau -*The Rocks Begin to Speak*- deserves the credit for proving petroglyphs "read!")

"A greenhouse does not have to be a separate structure sitting all by itself out in a field. It can be just as easily be a part of your house. In fact, it is much cheaper to build a greenhouse as an addition to an existing house than it is to put one up separately in the backyard. If built in the right location with respect to existing windows and doors, it can be a very good heat source for the house on those cold, but sunny, winter days." *LOW-COST ENERGY-EFFICIENT SHELTER*, p.289

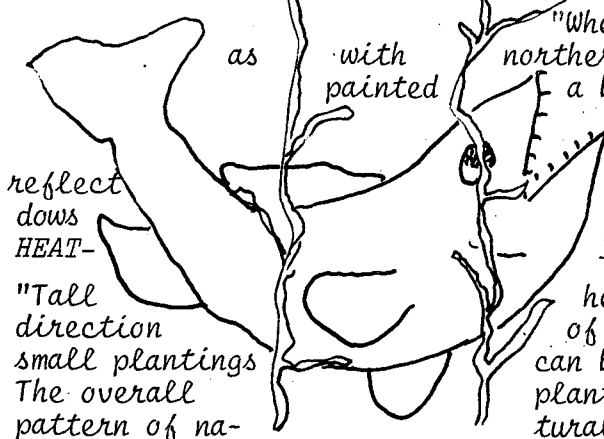


not have to be a separate structure sitting all by itself out in a field. It can be just as easily be a part of your house. In fact, it is much cheaper to build a greenhouse as an addition to an existing house than it is to put one up separately in the backyard. If built in the right location with respect to existing windows and doors, it can be a very good heat source for the house on those cold, but sunny, winter days." *LOW-COST ENERGY-EFFICIENT SHELTER*, p.289

"Ducks enjoy a symbiotic relationship with fish, for they feed on invertebrates and on vegetation fertilized by the fish. The Muscovy breed seems to be the hardiest and the easiest to raise. It has been found that carp raised in ponds to which ducks have access grow from two to five times faster than those lacking association with ducks." *THE OWNER-BUILT HOMESTEAD*, p.314 (II)

"The Chinese found many centuries ago that sprouting also changes a seed's chemistry. Sprouting changes starch into easily digestible malt sugar with about ten-times the nutrient value of the plain, ungerminated seed." *THE OWNER-BUILT HOMESTEAD*, p.177 (I)

- *DOME NOTES* by Peter Hjersman, 1976 (Erewon Press, Berkeley, Ca.) 202 pages.
- *IN HARMONY WITH NATURE* "Creative Country Construction" by Christian Bruyere & Robert Inwood, 1975 (Drake Publishers, New York, N.Y.) 213 pages.
- *SUN, EARTH* by Crowther, Karius, Atkinson, & Frey, 1977 (Crowther/Solar Group, Denver, Co.) 232 pages.
- *YOUR ENERGY-EFFICIENT HOUSE* "Building and Remodeling Ideas" by Anthony Adams, 1976 (Garden Way Publishing, Charlotte, Vt.) 118 pages.
- *SHELTER*, Shelter Publications, 1973 (Random House, New York, N.Y.) 176 pages.
- *HOUSING BY PEOPLE* "Toward Autonomy in Building Environments" by John Turner, 1977 (Pantheon Books, New York, N.Y.) 169 pages.
- *SURVIVAL SCRAPBOOK #1: SHELTER* by Stefan A. Szczelkun, 1973 (Schocken Books, New York, N.Y.) over 150 pages.



"Where direct sunlight is not available, northern exposure, a fairly solid fence, a brilliant white and set back far enough from the north wall of the house so that the fence catches the sun, can a great deal of light into those windows that face north." *SOLAR HOMES AND SUN*, p.168

hedges can effect major changes in the of air flow. Combinations of large and small plantings can be used for different flow patterns. The overall planting scheme can provide a whole new natural ventilation. Large plantings can be

used to redirect the breezes on the site." *YOUR ENERGY-EFFICIENT HOUSE*, p.97

"Carefully cutting away the tufa with an adze-like tool, and carrying in his mind where the steps should be, Kemel has recently hollowed out a new room with a staircase leading to a chamber above, which has taken him three years to complete in his spare time." *SHELTER*, p.99

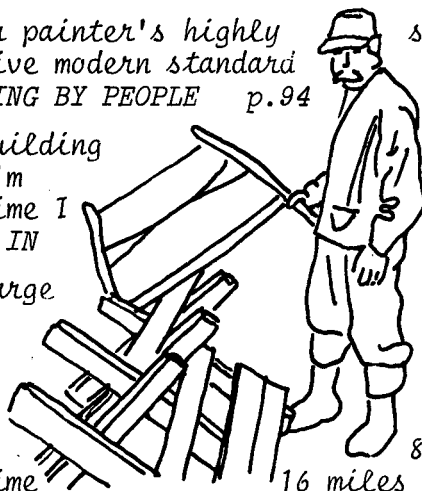
"If a tree is planted very near the large granite boulders that are plentiful on the farm, it will have its own natural heat-storage sink. The rock, heated by the constant sun, reradiates that heat to the atmosphere at night, often preventing the temperature from dropping to a level damaging to trees." *LIVING WITH ENERGY*, p.101

"The purpose of testing this progression of corners is to evaluate the effect of room shape on fire spread. By studying the influence of shape, a more thorough comprehension of design factors on fire safety can be gained." *DOME NOTES*, p.139

"The paradox of the car painter's highly supportive shack and the mason's highly oppressive modern standard house raised the issue of housing value..." *HOUSING BY PEOPLE* p.94

"I spent a long time building set price on it when I'm I got pleasure every time I put a log into place." *IN*

"The earth possesses large derived from several the heat rejected from may be very rich in ken in a street in the shown to be as much as recorded at the same time" *p.40*



it, but I can't put any doing things for myself. cleaned out a notch or *HARMONY WITH NATURE*, p.72

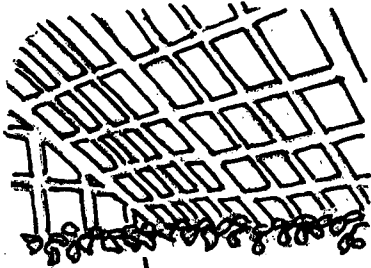
quantities of ambient heat sources. The air collects the combustion of fuel and heat. Air temperatures tangent of London have been 8°C higher than temperatures 16 miles away." *DOMESTIC HEAT PUMPS*

- *DOMESTIC HEAT PUMPS* by John Sumner, 1976 (Prism Press, Gr. Brit.) 117 pages.
- *PLUMBING I* by Harry Slater, 1974 (Delmar Publishers, Albany, N.Y.) 136 pages.
- *PLUMBING II* by Harry Slater, 1975 (Delmar Publishers, Albany, N.Y.) 154 pages.

Find additional chapters in: *MIAMI CONFERENCE PROCEEDINGS*; *ALTERNATIVE SOURCES OF ENERGY*; *ENERGY BOOK #2*; *UNIFORM MECHANICAL CODE*; and *UNIFORM PLUMBING CODE*.

"Pipes must be securely supported both horizontally and vertically under many different conditions and to various building materials. The first consideration is the weight of the pipe and its contents. Expansion and contraction due to changing temperature within the pipes must also be considered. Pipes in some buildings are subject to vibration." *PLUMBING I*, p.58

"A rain leader is a pipe which carries rainwater from the roof or gutter of a structure to an approved point of disposal. Depositing rainwater into sewage systems is not allowed in today's ecologically minded society." *PLUMBING II*, p.119



"After the final inspection, the 'approved' structure can become the nucleus for a wide range of agriculturally exempted additions. A grape arbor may become an outdoor summer living room. A greenhouse may make an excellent indoor winter living room. Hay lofts may become sleeping lofts, and an agricultural food processing center may become a kitchen." *THE OWNER-BUILDER AND THE CODE*, p.152

• *THE OWNER-BUILDER AND THE CODE* "Politics of Building Your Home" by Ken Kern, Ted Kogon, & Rob Thallon, 1976 (Owner-Builder Publications, Oakhurst, Ca.) 173 pages.

• *DWELLING CONSTRUCTION UNDER THE UNIFORM BUILDING CODE* (International Conference of Building Officials, Whittier, Ca.) 84 pages.

1976



- *UNIFORM BUILDING CODE*, 1976 (International Conference of Building Officials, Whittier, Ca.) 728 pages.
- *ELECTRICAL CODE FOR ONE- AND TWO-FAMILY DWELLINGS* "Excerpted from the 1975 National Electrical Code" by the National Fire Protection Association, 1975 (Boston, Ma.) 163 pages.
- *UNIFORM HOUSING CODE*, 1976 (International Conference of Building Officials, Whittier, Ca.) 39 pages.
- *UNIFORM MECHANICAL CODE*, (International Association of Plumbing & Mechanical Officials & International Conference of Building Officials, Whittier, Ca.) 1973, 275 pages.
- *UNIFORM PLUMBING CODE*, 1976 (International Association of Plumbing & Mechanical Officials, Los Angeles, Ca.) 335 pages.
- *UNIFORM SOLAR ENERGY CODE*, 1976 (International Association of Plumbing & Mechanical Officials, Los Angeles, Ca.) 102 pages.
- *PATENT LAWS* by the Patent and Trademark Office, U.S. Department of Commerce 1976 (U.S. Government Printing Office, Washington, D.C.) 137 pages.

"Too much insulation can, in certain circumstances, lead to an increase in overall energy consumption by introducing the need to cool overheated interiors during warmer periods. Any improvement in thermal isolation restrains the free and natural passage of water vapour. The indiscriminate use of isolating techniques can create problems of incorrect ventilation and rife condensation." *BUILDING FOR ENERGY CONSERVATION*, p.146

- *A MANUAL ON BUILDING CONSTRUCTION* by the Reverend Harold K. Dancy, 1977 (Intermediate Technology Publications Ltd., London) 362 pages.
- *BASIC BUILDING DATA* "10,000 Timeless Construction Facts" by Don Graf, 1949 (Van Nostrand Reinhold Co., New York, N.Y.) 809 pages.

(to be continued)

- *BUILDING FOR ENERGY CONSERVATION* by P.W. O'Callaghan, 1978 (Pergamon Press, England) 232 pages.

"Wood selected for use in cabinet work must be thoroughly seasoned and should be without defects in any exposed parts. The use of well-seasoned material reduces warping, shrinking or swelling to a minimum. Installation of cabinet work should be left until all the moisture within the building has evaporated and the plaster is dry." *BASIC BUILDING DATA*, p.670

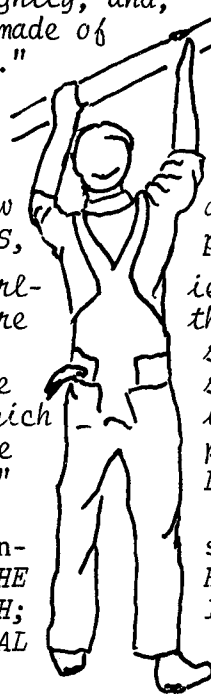


"A concrete lintel is a beam, and every beam bearing weight has two main internal stresses, compression in the upper half and tension in the lower half. The upper half must be constructed to resist the compression and the lower to resist being pulled apart due to the tension." *A MANUAL ON BUILDING CONSTRUCTION*, p.314

- *METALWORKING HANDBOOK "Principles & Procedures"* by Jeannette T. Adams, 1976 (Arco Publishing Co., Inc., New York, N.Y.) 480 pages.
- *OIL DRUM FORGES "Bellows Operated; Fan Operated; Agricultural Equipment & Tools for Farmers Designed for Local Construction"* by R.M. Coombs & H.S. Pearson, no date (Intermediate Technology Publications Ltd., London) 40 pp.
- *INDUSTRIAL PROFILE IRON FOUNDRY* "Compiled by the Industrial Liaison Unit of the Intermediate Technology Development Group Ltd., 1975 (Intermediate Technology Publications Ltd., London) 19 pages.
- *HOW TO MAKE A METAL-BENDING MACHINE*, 1973 (Intermediate Technology Publications, Ltd., London) 19 pages.

"Small rivets made of aluminum, copper, brass, or similar soft metals must be hammered lightly, and, naturally, will require a smaller hammer. Larger rivets made of the harder types of metals will require a heavier hammer." *METALWORKING HANDBOOK*, p.208

"The material ple leather is Certain types they will allow *OIL DRUM FORGES*, p.18



used for the bellows must be airtight. If sup- available, this is the best material to use. of canvas can also be used, but if too thin, air to escape when the bellows are compressed." *OIL DRUM FORGES*, p.18

"One of the earl- fertilizer where In addition to in brewing. The fine powder, which but also in the face coatings." **

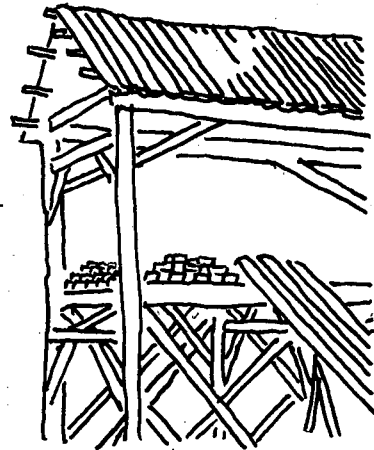
iest uses for gypsum was in agriculture, as a there were deficiencies of calcium or sulphur. supplying nutrients for plant growth, it is used softness of gypsum facilitates grinding to a is of use as a filler, notably in paper-making, plastics industry, and it has been used in sur- *LIME AND ALTERNATIVE CEMENTS*, p.77

For more on con- WITH ENERGY; THE SELF; SOFT-TECH; LIAN TRADITIONAL LOGY HANDBOOK;

struction & materials, see chapters in: *LIVING HOMEOWNER'S ENERGY GUIDE*; *BUILD IT BETTER YOUR- INTRODUCTION TO APPROPRIATE TECHNOLOGY*; *AUSTRA- BUSH CRAFTS*; *RADICAL TECHNOLOGY*; *VITA TECHNO- RAINBOOK*; *LIKLIK BUK*; and *UNIFORM BUILDING*

CODE.

- *SOIL-CEMENT: ITS USE IN BUILDING* by the Department of Economic & Social Affairs, 1964 (United Nations Publication, New York, N.Y.)
- *LIME AND ALTERNATIVE CEMENTS* "Proceedings of a One-Day Meeting on Small-Scale Manufacture of Cementitious Materials," Dr. Robin Spence, Ed., 1976 (Intermediate Technology Publications, Ltd., London) 164 pages.
- *FERROCEMENT* by Stanley Abercrombie, 1977 (Schocken Books, New York, N.Y.)
- *FERROCEMENT: APPLICATIONS IN DEVELOPING COUNTRIES* by the Advisory Committee on Technological Innovation, February 1973 (National Academy of Sciences, Washington, D.C.) 93 pages.



"A particular advantage of ferrocement in building food-storage facilities in developing countries is its adaptability to an almost unlimited range of curved shapes and local conditions. Ferrocement silos require little maintenance, and they offer protection against rodents, birds, insects, water, and weather." *FERROCEMENT: APPLICATIONS IN DEVELOPING COUNTRIES*, p.28

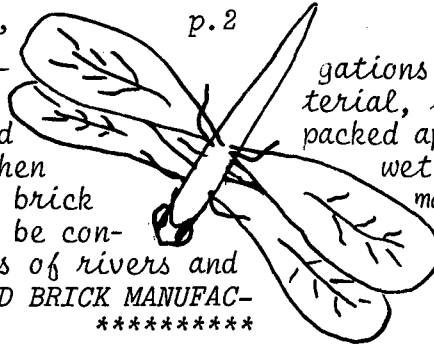
"After the overnight drying, the blocks should still be protected from the weather because they must still cure slowly for four or five more days. Soaking will harm the blocks at this stage. Sunshine will make them cure too quickly, reducing their strength. In very hot climates, blocks should be kept moist during this period. In any climate, they should be prevented from curing too fast." *MAKING BUILDING BLOCKS WITH THE CINVA-RAM*, p.18

- *SELECTION OF MATERIALS FOR STABILIZED BRICK MANUFACTURE*, Technical Bulletin No.5, March 1970 (Department of Public Works Building Research Station, Papua New Guinea) 6 pages.
- *SELECTION OF MATERIALS FOR BURNT CLAY MANUFACTURE*, Technical Bulletin No.7, March 1970 (Department of Public Works Building Research Station, Papua New Guinea) 5 pages.
- *MOVING OF BURNT CLAY* Technical Bulletin No.11, December 1973 (Department of Public Works Building Research Station, Papua New Guinea) 13 pages.
- *CAPACITY BRICK KILN*, Technical Bulletin No.12, December 1973 (Department of Public Works Building Research Station, Papua New Guinea) 14 pages.
- *MAKING BUILDING BLOCKS WITH THE CINVA-RAM* "A Supervisor's Manual," 1972 (VITA, Inc., Mt. Rainier, Md.) 23 pages.

"The best place to look for clay is in road cuttings, ditches and river banks. If none of these are close by then a hole should be dug so that the varying layers of subsoil material can be seen." *SELECTION OF MATERIALS*

FOR BURNT CLAY MANUFACTURE,

"When carrying out investi-
tially suitable brick ma-
that have an uncracked hard
become boggy or slippery when
able surrounding areas for brick
for road works should also be con-
road cuttings and the banks of rivers and
OF MATERIALS FOR STABILIZED BRICK MANUFAC-



p.2

gations to determine poten-
terial, local paths and tracks
packed appearance and do not
wet may indicate suit-
material; pits used
sidered along with
streams." SELECTION
TURE, p.3

- SOLAR GREENHOUSE & SWIMMING POOL by Harry E. & Harry J.L. Thomason, 1974 (Edmund Scientific Co., Barrington, N.J.) 22 pages.
- THE SURVIVAL GREENHOUSE "An Eco-System Approach to Home Food Production" by James B. Dekorne, 1975 (Blue Feather Press, Santa Fe, N.M.) 165 pages.
- SOLAR GREENHOUSE "Design, Construction, Operation: Food & Heat Producing" by Rick Fisher & Bill Yanda, 1977 (John Muir Publications, Santa Fe, N.M.) 161 pages.
- THE HANDMADE GREENHOUSE "From Windowsill to Backyard" by Richard Nicholls, 1975 (Running Press, Philadelphia, Pa.) 127 pages.

"Scientists often search a pest's homeland for its natural enemies. If a natural pre-
dator is found, it is carefully observed to be
sure it will be beneficial only; then it is raised in great
numbers in an insectary. The predators are then ready to be
sold for release in home gardens. If you can't bear the thought of re-
leasing insects in your garden, consider this: there are over one million
different types of insects on earth, only a very small number of which
are capable of causing people discomfort." SUNSET WESTERN
GARDEN BOOK, p.53



"All other Solar Energy experts say that the solar heat col-
lector should be turned directly south for maximum heat-collecting a-
bility. The Thomasons teach that slightly west of south is best. They 'trade' an
hour or so of morning sun for an hour or so of afternoon sun." SOLAR GREEN-
HOUSE & SWIMMING POOL, p.8

"A much more important problem than increasing the light level for your
plants is, ironically, protecting your plants from too MUCH light." THE
HANDMADE GREENHOUSE, p.74

"We never cease to marvel at the yearly cucumber jungle created by only
one plant. Next year we intend to train the vine outside via a ventilator
opening so that it won't shade such a large growing area. The same techni-
que could be used for melons..." THE SURVIVAL GREENHOUSE, p.115

"Gardeners used to 'taste' their soil before planting.
If it tasted sour or bitter, it was not good for raising
plants, but if it tast- ed sweet, a high yield could be expected.
The soil that tasted sour was too acid; soil that tasted bitter was
too alkaline." SOLAR GREENHOUSE, p.66



For more on greenhouses, try chapters in: ALTERNATIVE SOURCES OF ENERGY;

THE MOTHER EARTH NEWS No.36; BUILD IT BETTER YOURSELF; JOURNAL OF THE
 NEW ALCHEMISTS; ENERGY WE CAN LIVE WITH; SURVIVAL SCRAPBOOK #3;
 RAINBOOK; and NICHOLSON SOLAR ENERGY CATALOGUE.



 "Many governments, in fact, must view the tobacco trade with mixed emotions. As they boost cigaret and tobacco taxes and import duties - often to discourage smoking, governments simultaneously create a major revenue source that is far easier to justify politically than increases in other kinds of taxes would be. In many countries the tax revenue from tobacco products exceeds the income received by farmers for the original tobacco crop." CUTTING TOBACCO'S TOLL, p.21

Having watched my Uncle Art, who owns Good Time Farms, buy and sell horses with professional horse traders, I have come to realize that bargaining is a business technique and an art. I'm afraid that most of us are poor horse traders." FARM FEVER, p.234

"The only serious problem with the application of potash is that of luxury consumption by crops that are removed and sold from the farm. In luxury consumption, the plants take up more potassium than they actually require for maximum growth. If the leaves and stalks are returned to the field, this does no harm. If, however, they are removed, as in the case of hay, much potassium can be lost in the handling of the manure." SUN, SOIL, & SURVIVAL, p.227

- FARM FEVER "How to Buy Country Land and Farm It - Part Time or Full Time" by Jerry Baker & Dan Kibbie, 1977 (Funk & Wagnalls, N.Y.) 276 pages.
- SUN, SOIL & SURVIVAL "An Introduction to Soils" by Kermit C. Berger, 1976 (University of Oklahoma Press, Ok.) 371 pages.
- SUNSET WESTERN GARDEN BOOK "With Alphabetical Plant Listings and Descriptions" by the Editors of Sunset Magazine and Sunset Books, 1977 (Lane Publishing Co., Menlo Park, Ca.) 448 pages.
- SIMPLE LIVING "Proceedings of Second Annual Simple Living Workshops at Ukiah, Ca.", 1977 (Rural Institute & Ukiah Community Center, Ukiah, Ca.) 122 pages.

"The replacement of rural populations and cultures by agribusiness operated primarily on the basis of short-term incentives rather than as legacies for future generations, is resulting in a tremendous loss of biological and social diversity in the countryside. When the land and landscapes become just another commodity, society as a whole suffers." RADICAL AGRICULTURE, p.263

See chapters on farming in: ALTERNATIVE SOURCES OF ENERGY; BUILD IT BETTER YOURSELF; THE UNSETTLING OF AMERICA; ENERGY WE CAN LIVE WITH; RADICAL TECHNOLOGY; VITA TECHNOLOGY SOURCEBOOK; ENERGY FOR SURVIVAL; RAINBOOK; APPROPRIATE TECHNOLOGY SOURCEBOOK; FARMING; TOOLS

FOR AGRICULTURE; and ENERGY PRIMER.

"It is very important, first of all, to learn to identify those few mushrooms (mostly of the Amanita and Galerina families) which are deadly poisonous. These mushrooms are attractive and tasty and therefore may fool the uninformed fungus hunter. Many persons mistake the Amanitas for the common field or meadow mushroom (*Agaricus campestris*)." *SIMPLE LIVING*, p.87

- *THE EARTHWORM BOOK* by Jerry Minnich, 1977 (Rodale Press, Emmaus, Pa.) 372 pages.
- *ADVANCED GUIDE TO HYDROPONICS* by James Sholto Douglas, 1976 (Drake Publishers, Inc., New York, N.Y.) 333 pages.
- *DEVELOPMENT OF INDIAN & AMERICAN AGRICULTURE - A COMPARATIVE STUDY* by Ismail Shariff, 1968 (Interstate Printers & Publishers, Wisconsin U., Green Bay, Wi.) 240 pages.
- *RADICAL AGRICULTURE*, Richard Merrill, Ed., 1976 (Harper Colophon Books, New York, N.Y.) 459 pages.
- *BIODYNAMIC AGRICULTURE* by H.H. Koepf, B.D. Petersson, & W. Schaumann, 1976 (The Anthroposophic Press, Spring Valley, New York, N.Y.) 429 pages.

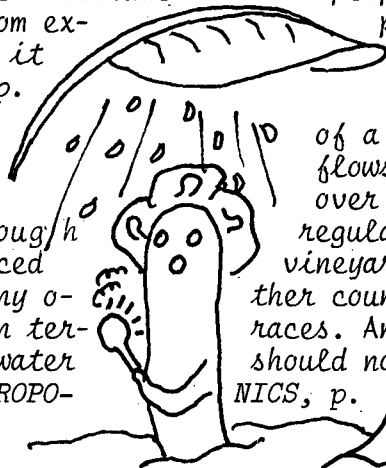
"Learn to recognize the wildlife in your garden and never kill an insect outdoors just because it is there! (Guess we'll modify that to -except mosquitoes!) What good is an aphid? It is necessary to keep the beneficial insects around, if for no other reason, so that the next aphid that flies into the area will find natural enemies ready and waiting." *CITY PEOPLE'S BOOK OF RAISING FOOD*, p.177

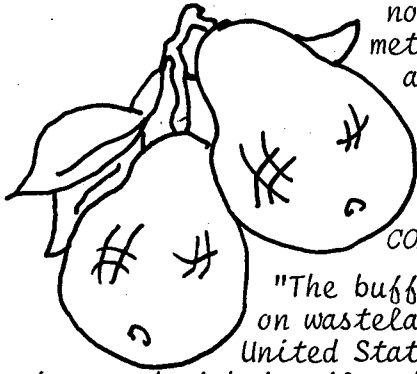
"Worms need moisture because they can only get oxygen by its dissolving directly on their skins. On the other hand, they can drown in too much, so it's a good idea to fluff up your compost mixture until it can be compressed in the fist into a ball, 'wet but not dripping.'" *THE EARTHWORM BOOK*, p.277

"It should not really be necessary to ask whether it also matters to nature what kind of inner attitude people have who work on the land. Those who do, know from experience, which is borne out again and again, that it does indeed matter." *BIO-DYNAMIC AGRICULTURE*, p. 268

"The terraces consist of a series of contour banks and channels. The water flows from the highest down to the lowest, spreading over the surface of each plot, whence it escapes through regular outlets to the next in order of descent. Terraced vineyards may be seen in Syria, France, Italy, and many other countries. In China, rice is commonly cultivated in terraces. An important principle of irrigation is that the water should not be too rapid in its flow." *ADVANCED GUIDE TO HYDROPONICS*, p. 164

"From the very beginning, agriculture in India has been considered to be a way of life and





not as a science of growing crops. Concomitantly the method and techniques of cultivation have been old and inefficient. In addition to this, the inputs that go in growing crops are both weak and insufficient. As a result of all these, production is low and the cost is high in terms of human effort." *DEVELOPMENT OF INDIAN & AMERICAN AGRICULTURE, - A COMPARATIVE STUDY, p.220*

"The buffalo gourd is a vigorous perennial. It grows wild on wastelands in the deserts of Mexico and the southwestern United States and produces an abundant crop of fruit containing seed rich in oil and protein. ... The buffalo gourd has been used by North American Indians for centuries. They used the seeds for food and soapy extracts of the fruit pulp and vine for washing clothes and cleaning hides." *UNDEREXPLOITED TROPICAL PLANTS WITH PROMISING ECONOMIC VALUE, pp. 95-96*

"The winged bean has several nutritional advantages over the soybean. All parts of the plant can be eaten - tubers, seeds, leaves, flowers, and shoots - whereas only seeds of the soybean are used. The bitter, beany flavor of many soybean products appears to be absent in the winged bean, which should encourage its widespread introduction into the human diet." *WINGED BEAN, A HIGH-PROTEIN CROP FOR THE TROPICS, p.4*

- *COMPOSITION OF FOODS* "Raw, Processed, Prepared: Agriculture Handbook No.8" by Bernice K. Watt & Annabel L. Merrill of Consumer & Food Economics Institute, 1975 (U.S. Department of Agriculture, Washington, D.C.) 189 pages.
- *GARDENING FOR PEOPLE* "Who Think They Don't Know How" by Douglas Moon, 1975 (John Muir Publications, Santa Fe, Ca.) 266 pages.
- *THE POSTAGE STAMP GARDEN BOOK* "How to Grow All the Food You Can Eat in Very Little Space" by Duane Newcomb, 1975 (J.P. Tarcher, Inc., Los Angeles, Ca.) 150 pages.
- *CITY PEOPLE'S BOOK OF RAISING FOOD* by Helga & William Olkowski, 1975 (Roda Press, Emmaus, Pa.) 228 pages.

"This particular weed has a soft look uncommon to most weeds, and its color is somehow wrong, too healthy and bright a green, perhaps. Now, however, because I'm used to it, I can spot a new one out of the corner of my eye at twenty feet after sunset..." *GARDENING FOR PEOPLE (who think they don't know how) p.145*

"Frozen orange juice concentrate and canned orange juice on the retail market are prepared mainly from Florida oranges and reflect the nutritive value of these oranges. Approximately two-thirds of a canned concentrate which is packed largely for institutional use is prepared from California Valencias; the remainder, from Florida oranges." *COMPOSITION OF FOODS, p.176*

"Under normal conditions there are bees of all

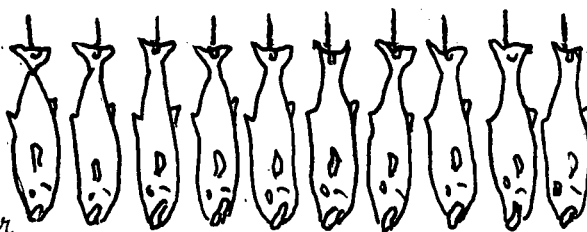


ages in the hive. The age of the bee determines in general its daily activity. However, when conditions become abnormal, age is no longer a criterion of duties. If a colony is made up of old bees, for instance, some of them will become physiologically young, and conversely if it is made up of all young bees, some of old and take on duties normal to such bees. The reasons and the causes for bees changing work in this manner are unknown." BEE-KEEPING IN THE UNITED STATES, p. 34

"Cabbage often turns out to be a big show-off. It comes in green, red, and purple varieties and is a great conversation piece grown singly in a prominent spot. The only complaint that I have about cabbage is that it takes an awful lot of space for what you get out of it. If you insist on cabbage, you might plant three or four in an IPS garden, or put one by itself in a flower bed where it can be ornamental." THE POSTAGE STAMP GARDEN BOOK, p.59

- SUN DRY YOUR FRUITS AND VEGETABLES, 1958 (U.S. Department of Agriculture, Washington, D.C.) 26 pages.
- HOW TO DRY FRUITS AND VEGETABLES, Publ.#45, Community Centre C-17 Safdarjung Development Area, New Delhi-110016
- THE WINGED BEAN, A HIGH-PROTEIN CROP FOR THE TROPICS, 1975 (National Academy of Sciences, Washington, D.C.) 43 pages.
- UNDEREXPLOITED TROPICAL PLANTS WITH PROMISING ECONOMIC VALUE, 1975 (National Academy of Sciences, Washington, D.C.) 189 pages.
- HOW TO SALT FISH by Daniel Casper, 1966 (VITA Publications Service, Mt. Rainier, Md.) 9 pages.
- SMOKING FISH IN A CARD - BOARD SMOKEHOUSE (VITA Publications Service, Mt. Rainier, Md.) 10 pages.
- CUTTING TOBACCO'S TOLL, Worldwatch Paper #18 by Erik Eckholm, March 1978 (Worldwatch Institute, Washington, D.C.) 40 pages.
- CONSTRUCTION OF A BRICK HOT AIR COPRA DRIER, 1972 (Tech. Bull.#9, Department of Public Works Building Research Station, Papua, New Guinea) 29 pp.
- BEEKEEPING IN THE UNITED STATES, 1971 (Handbook #335, U.S. Department of Agriculture, Washington, D.C.) 147 pages.
- POND FISHERY, Community Centre C-17 Safdarjung Development Area, New Delhi-110016, 9 pages.
- FRESHWATER FISH POND CULTURE & MANAGEMENT by Marilyn Chakroff, 1976 (VITA Publications, Mt. Rainier, Md.) 191 pages.

"Some dehydrated soaking, whilst leafy vegetables, ing. Large pieces smaller ones such pieces and shreds they have a larger volume to absorb moisture. Fruits can be soaked overnight. Vegetables, if allowed to soak more than two hours, show signs of spoilage." HOW TO DRY FRUITS AND VEGETABLES, p.5



foods benefit by others, mainly green refresh while cook- refresh slowly while as slices, diced restore quickly as surface per unit

"To support the drying trays, bricks are projected at three levels on the two side walls." CONSTRUCTION OF A BRICK HOT AIR COPRA DRIER, p.13

"Some foods, which in one country may seem unsuitable for drying, are being dried in others. The tomato is an example of this. In the United States it has been less commonly dried than some other vegetables. In some Middle East countries it has been dried frequently." SUN DRY YOUR FRUITS AND VEGETABLES, p.2

"Fish are prey to numerous diseases especially when they are kept under artificial conditions. Adverse hydrological conditions lower the resistance of fish to parasitic attack. Mechanical injuries due to careless handling may also facilitate parasitic infection. Prevalence of disease is, to an extent, dependent upon stocking density - disease being more common in heavily stocked ponds." POND FISHERY, p.9

"Anyone who can use a knife, saw, and hammer can make a low-cost smokehouse from a cardboard carton. It can be folded flat and moved easily. It is efficient and easy to operate. Its only disadvantage is that it cannot be exposed to rain. A 30-inch square smokehouse holds about 60 pounds of split fish." SMOKING FISH IN A CARDBOARD SMOKEHOUSE, p.1

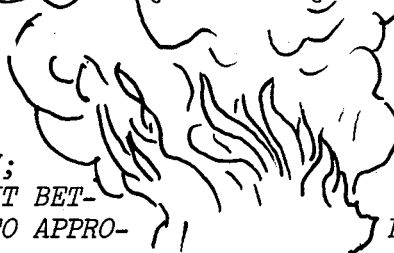
"Even spoiled fish can be used, although it cannot be eaten by human beings. Spoiled fish can be cut up and boiled, then dried in the sun or cooked in an oven until it is very flaky. Once this is done, grind the fish into powder and mix it with powders of plants: this makes a very nutritious food for fish in ponds." FRESHWATER FISH POND CULTURE & MANAGEMENT, p.163

"Start by salting non-fatty, white-meated varieties of fish. The salting of fatty fish brings up problems of rancidity, rusting and spoilage which can be handled better after you have experience in salting." HOW TO SALT FISH, p.1

"As far as possible, home-produced feeding stuffs should be used. Wherever livestock is kept it becomes obvious that the animals adapt themselves to the local habitat. The many difficulties that arise with bought-in animals, difficulties familiar to vets and breeders alike, are an obvious indication." BIODYNAMIC AGRICULTURE, p.269

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There are food production chapters in: ALTERNATIVE SOURCES OF ENERGY; SIMPLE LIVING; BUILD IT BETTER YOURSELF; LIVING WITH APPROPRIATE TECHNOLOGY; FARMING;



tion chapters in: ALTERNATIVE SOURCES OF ENERGY; SIMPLE LIVING; BUILD IT BETTER YOURSELF; LIVING WITH APPROPRIATE TECHNOLOGY; FARMING;

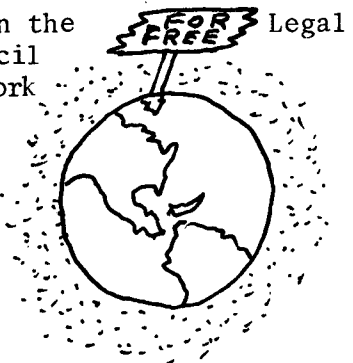
CLOUDBURST; AUSTRALIAN TRADITIONAL BUSH CRAFTS; PROGRESS AS IF SURVIVAL MATTERED; ECOSCIENCE; THE MOTHER EARTH NEWS No. 36; JOURNAL OF THE NEW AL-CHEMISTS; TWENTY-NINTH DAY; OUR SYNTHETIC ENVIRONMENT; OTHER HOMES & GAR-BAGE; ENERGY WE CAN LIVE WITH; RADICAL TECHNOLOGY; VITA TECHNOLOGY HAND-BOOK; APPROPRIATE TECHNOLOGY SOURCEBOOK; TOOLS FOR AGRICULTURE; and LIKLIK BUK.

"Experience has shown that, first, it pays to protect carefully new seed-ings from all grazing until the young plants have developed good roots to anchor themselves and effectively resist the pulling effects of grazing. Usually this will be from one to two years after seeding. Second, the seeded grasses are just about as delicate as the important native perennial bunch grasses. Neither will hold up very long under excessive use." SOIL CONSERVATION, p.352

"Taxation and assessment policies have clearly contrib-uted to the loss of California farmland. Near an expanding urban area, farmland may sell at several times its agricultural value. Because de-velopers must bid high in order to persuade the first owners to cash in on their land, the price of parcels may be far higher than its real value for development. This artificial price then becomes the basis for assessed valuation and thus for the property tax. These high taxes encourage owners to sell." CALIFOR-NIA LAND PLANNING FOR PEOPLE, p.74

- RECOMMENDED STANDARDS FOR SANITARY LANDFILL DESIGN, CONSTRUCTION, & EVALU-ATION AND MODEL SANITARY LANDFILL OPERATION AGREEMENT by the National Solid Wastes Management Association & the Federal Solid Waste Management Program, 1971 (U.S. Environmental Protection Agency, Washington, D.C.) 23 pages.
- THE CALIFORNIA LAND PLANNING FOR PEOPLE "Report of the Califor-nia Land-Use Task Force" by the Planning & Conserva-tion Founda-tion, 1975 (William Kaufmann, Inc., Los Altos, Ca.) 96 pages.
- POLITICS OF LAND "Ralph Nader's Study Group Report on Land Use in Califor-nia" by Robert C. Fellmeth, Project Director, 1973 (Grossman Publishers, New York, N.Y.) 715 pages.
- THE USE OF LAND: A CITIZENS' POLICY GUIDE TO URBAN GROWTH, William K. Reilly Ed., 1973 (Thomas Y. Crowell Co., New York, N.Y.) 318 pages.
- LAND USE CONTROLS IN THE UNITED STATES "A Handbook on the Rights of Citizens by Natural Resources Defense Council Inc.," Elaine Moss, Ed., 1977 (The Dial Press, New York N.Y.) 362 pages.

"Because of the aridity of the climate, dry farming must conserve the limited moisture. This is usually accomplished by the summer fallow. The object is to open the soil so that the rains can penetrate it, to work the land to keep out the weeds, and to prevent



the evaporation of the water until the crops can appropriate it. Following also rests the land and helps the process of nitrification, an important factor in one-crop agriculture." *LAND ECONOMICS*, p.248

"Historically, Americans have thought of these (development) rights as coming from the land itself, 'up from the bottom' like minerals or crops. As a result, land-use regulations have been viewed as restrictions on each landowner's pre-existing rights rather than as grants of rights he did not have before. If a regulation permits construction of one dwelling unit for each 50 acres of land area, the owner of a 500-acre tract thinks, not that he has been granted a right to build 10 units, but that he has been deprived of a right to build more than 10." *THE USE OF LAND*, p.140

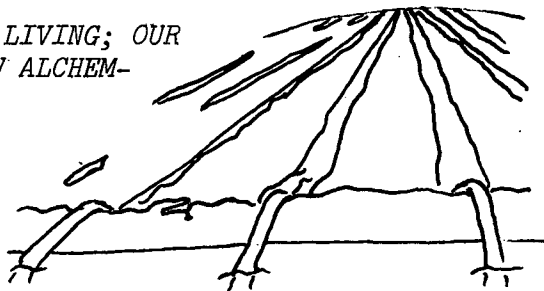
- *LAND ECONOMICS* by Richard T. Ely & George S. Wehrwein, 1964 (Wisconsin U. Press, Madison, Wi.) 496 pages.
- *COUNTRY LAND AND ITS USES* by Howard & Suzen Orem, 1974 (Naturegraph Publishers, Healdsburg, Ca.) 310 pages.
- *APPROVED PRACTICES IN SOIL CONSERVATION* by Albert B. Foster, 1973 (Interstate Printers & Publishers, Inc., Danville, Il.) 497 pages.
- *THE NATURE AND PROPERTIES OF SOILS* by Nyle C. Brady, 1974 (Macmillan Publishing Co., Inc., New York, N.Y.) 639 pages.
- *SOIL CONSERVATION* by J.H. Stallings, 1957 (Prentice-Hall, Inc., N.J.) 575 pp.
- *WORLDWIDE LOSS OF CROPLAND*, *Worldwatch Paper #24* Lester R. Brown, October 1978 (Worldwatch Institute, Washington, D.C.) 48 pages.

"In a world facing an acute shortage of productive cropland, any loss of topsoil should cause concern, for such a loss is essentially irreversible in the short term. Even under normal agricultural conditions, including the heavy use of fertilizers and tillage practices that gradually mix subsoil into topsoil and that incorporate organic matter, creating an inch of new topsoil can take 100 years; if left to nature, it may take centuries." *WORLDWIDE LOSS OF CROPLAND*, p.26

"It is best to fill the gullies during the time of year that a close-growing crop may be seeded immediately on the disturbed area to protect it from washing. Do not attempt to block the gully by partially filling spots along the waterway channel. This merely creates waterfalls which wash out quickly, causing more soil to be lost than if the gully were left untreated. The gully should be completely filled and shaped in one operation." *APPROVED PRACTICES IN SOIL CONSERVATION*, p.240

Read more on soil in chapters in: *SIMPLE LIVING*; *OUR SYNTHETIC ENVIRONMENT*; *JOURNAL OF THE NEW ALCHEMISTS*; *RAINBOOK*; *FARMING*; and *LIKLIK BUK*.

"But never in recorded history has the threat of starvation been greater than it is today. This threat is not due to the reduced capacity of the world to supply food. Indeed, this capacity is



greater today than it has ever been and is continuing to grow at a reasonable rate. The problem lies in the even more rapid rate at which world population is increasing. World food production per person is at best holding its own. In selected areas it is declining." *THE NATURE AND PROPERTIES OF SOILS*, p.578

"A sanitary landfill is an engineered method in which solid wastes are disposed of by spreading them in thin layers, compacting them to the smallest practical volume, and covering them with earth each day in a manner that minimizes environmental pollution." *RECOMMENDED STANDARDS, etc.*, p.1

"Most fruit trees, except tropical and citrus, require a period of freezing before the seed will germinate." *COUNTRY LAND AND ITS USES*, p.283

"As outmanned and outfinanced part of their weakness efforts. Many of their waged against the wrong as the conservation lobbyists are, has to do with their own lobbying campaigns are poorly organized and opponents." *POLITICS OF LAND*, p.462

"In addition to the actual drilling will have the effects which on oceanic ecological systems, there will be pressures on ecologically fragile and already greatly increased burdens on coastal areas, which will have to accommodate supporting and associated industries, distribution facilities, and residential and commercial development." *LAND USE CONTROLS IN THE U. S.*, p.236

"And so the circle starts to close in Nepal, a circle long completed in parts of India. As wood scarcity forces

farmers to burn more dung for fuel, and to apply less to their fields, falling food output will necessitate the clearing of every larger, ever steeper tracts of forest-intensifying the erosion and landslide hazards." *THE OTHER ENERGY CRISIS: FIREWOOD*, p.11 *****

- *FOREST FARMING* "Toward a Solution to Problems of World Hunger and Conservation" by J. Sholto Douglas & Robert A. de J. Hart, 1976 (Robinson & Watkins Books, Ltd., London) 197 pages.
- *FOREST ECOLOGY* by Stephen H. Spurr & Burton V. Barnes, 1973 (The Ronald Press Co., N.Y.) 571 pages.
- *THE OTHER ENERGY CRISIS: FIREWOOD*, *Worldwatch Paper* #1 by Erik Eckholm, September 1975 (Worldwatch Institute, Washington, D.C.) 22 pages.
- *THE COMPLETE BOOK OF HEATING WITH WOOD* by Larry Gay, 1974 (Garden Way Publishing, Charlotte, Vt.) 128 pages.

(to be continued)

- *WOOD HEAT* by John Vivian, 1978 (Rodale Press, Emmaus, Pa.) 428 pages.
- *THE WORKING WOODBURNER* "Home Heating and Cooking with Fireplaces and Wood Stoves" by Dennis Dahlin, 1976 (Interactive Resources, Inc., Point Richmond, Ca.) 38 pages.
- *THE WOODBURNERS HANDBOOK* "Rekindling an old Romance" by Dick Havens, 1973 (Harpwell Press, Brunswick, Me.) 95 pages.
- *MODERN AND CLASSIC WOODBURNING STOVES* by Bob & Carol Ross, 1978 (Overlook Press, Woodstock, N.Y.) 158 pages.
- *THE WOODBURNERS ENCYCLOPEDIA* "An Information Source of Theory, Practice & Equipment Relating to Wood as Energy" by Jay Shelton & Andrew Shapiro, 1977 (Vermont Crossroads Press, Inc., Waitsfield, Vt.) 155 pages.
- *PLANTING FOR THE FUTURE: FORESTRY FOR HUMAN NEEDS*, *Worldwatch Paper* #26 by Erik Eckholm, February 1979 (Worldwatch Institute, Washington, D.C.) 64 pages.

"Tree nurseries are really a combination of plant maternity homes and seedling creches." *FOREST FARMING*, p.57

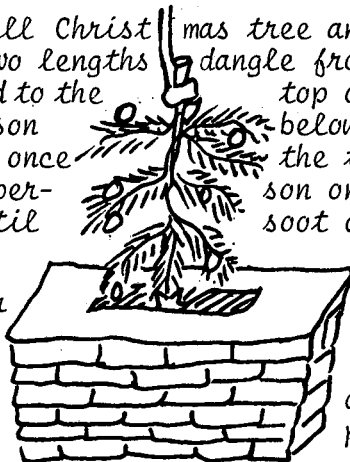
"Monoculture is monoculture, and with trees as with food plants, it is asking for epidemic disease, soil imbalance and an upset ecology that will ultimately call for corrective measures such as the sprays they are using to control gypsy moths in the artificial in-town plantings of the East and the several recent insect epidemics in the single-species lumberwood plantings of Douglas fir and the like out West." *WOOD HEAT*, p.315

"Generally the best drying time is in the windy spring months before the hardwoods leaf out to shade the forest floor. Spring cut wood can be burned the following winter. However, people who are really on top of it dry the wood out of doors the first summer and in the barn the next." *THE COMPLETE BOOK OF HEATING WITH WOOD*, p.60

"Wood heating can play an important role in recycling the mountains of waste that our society has been accumulating. According to the U.S. Forestry Service, as much as 30% of the debris headed for the typical city dump consists of reusable wood material." *THE WORKING WOODBURNER*, p.1

"The best equipment is a small Christmas tree and a long rope. Tie the rope to the tree so that two lengths dangle from top and bottom. Feed the length of rope attached to the top of the tree into the chimney from the roof. The person below in the house starts pulling gently on the tree and once the tree has reached the opening in the fireplace, the person on the roof pulls it back up. Repeat this process until soot ceases to fall down the chimney." *THE WOODBURNERS HANDBOOK*, p.84

"The combustion rate in air air-limited (as opposed to circumstance, if air is can be a combustion surge quick that the resulting



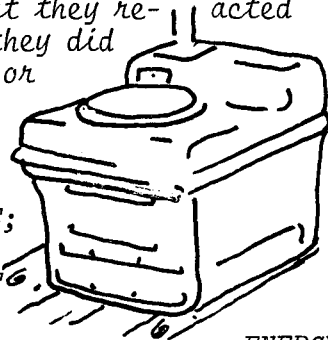
tight stoves is usually fuel-limited). Under this suddenly admitted there of the gases which is so pressure can force hot

gases out any available openings, such as the loading door, the air inlet, and cracks or leaky joints in both the stove and stove pipe. The phenomenon could be termed a slow, very small explosion." *THE WOODBURNERS ENCYCLOPEDIA*, p.61

"The Maine Audubon furnace does not need to control heat output because excess heat is stored in the gravel until needed by the building. The furnace is allowed to burn rapidly at high temperatures by injecting excess air into the furnace. This insures complete combustion and a minimum of air pollution. A single burn of the wood stove with 100 lbs. of hardwood should provide enough heat for an average winter's day." *MODERN AND CLASSIC WOODBURNING STOVES*, p.130

"Shreve was impressed with the independence of each species - the associated members of a plant community were not able to follow each other to a common geographic and habitat limit. He observed that the most closely associated species were not alike in their life requirements. The members of many diverse biological types or growth forms in a community found their soil moisture at different levels, procured it at different seasons, and lost it through dissimilar goliard organs, at the same time that they reacted differently to the same temperature conditions. Thus they did not live in the same climate but in different spatial or temporal sections of it." *FOREST ECOLOGY*, p.408

For more reading on wood, try chapters in *ALTERNATIVE NATURAL ENERGY SOURCES*; *HANDBOOK OF HOMEMADE POWER*; *PRODUCING YOUR OWN POWER*; *THE HOMEOWNER'S ENERGY GUIDE*; *NEW LOW-COST SOURCES OF ENERGY FOR THE HOME*; *ALTERNATIVE SOURCES OF ENERGY*; *BUILD IT BETTER YOURSELF*; *SOFT TECH*; *INTRODUCTION TO APPROPRIATE TECHNOLOGY*; *TWENTYNINTH DAY*; *ECOSCIENCE*; *OTHER HOMES & GARBAGE*; *NATURAL WORKBOOK#2*; *ENERGY WE CAN LIVE WITH*; *PRODUCING YOUR OWN POWER*; *RADICAL TECHNOLOGY*; *SURVIVAL SCRAPBOOK#3*; *ENERGY FOR MAN*; *SPECTRUM*; *RAINBOOK*; *FARMING*; *APPROPRIATE TECHNOLOGY SOURCEBOOK*; *LIKLIK BUK*; and *ENERGY PRIMER*.



ENERGY

"Greywater is most easily defined by what it is not: it is not toilet wastewater. Greywater comes from all the other appliances in the household except the toilet." *ABOVE-GROUND USE OF GREYWATER*, p.1

"For instance, you pay the man who pumps your (septic) tank by the hour. It can take two to three hours just to find some septic tanks because the resident doesn't have the slightest idea where to look. Many new home owners cement a driveway or patio right over the drainfield - totally eliminating aeration and plant life." *SEPTIC TANK PRACTICES*, p.59

"The composting of human and animal wastes has been practiced for some time in some Asian countries. In these cases a double vault is provided so that while one side is in use the other side can be composting." *STOP THE FIVE GALLON FLUSH!* p.72

"Laboratory and field experiments confirm that pathogens cannot survive the normally high temperatures of aerobic composting, nor do they survive very long in material that is allowed to age." *COMPOSTING PRIVY*, p.11

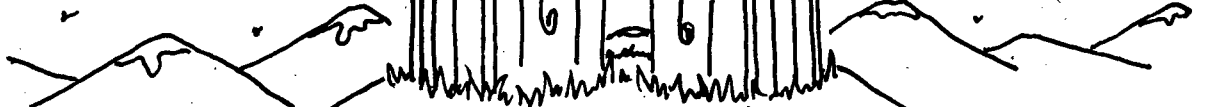
"Body wastes of humans are rich foodstuffs to microbes. Given adequate supplies of those foodstuffs, microbes become encouraged to digest some less suitable substances, too, for example, detergents. But when those natural

foodstuffs are absent, microbes can be quite disinclined to digest less suitable substances. The act of removing toilet wastes leaves many kinds of greywater less susceptible to biological treatment." *RURAL WASTEWATER DISPOSAL ALTERNATIVES*, p.35

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For more reading in this area of biomass, treated try chapters in: *SOFT-MADE POWER*; *MIAMI CONTERNATIVE NATURAL ENER-BUILD IT BETTER YOUR-HOMES AND GARBAGE*;

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CALIFORNIA ENERGY TRENDS & CHOICES; *ENERGY WE CAN LIVE WITH*; *LIKLIK BUK*; *PRODUCING YOUR OWN POWER*; *SURVIVAL SCRAPBOOK #3*; *KILOWATT COUNTER*; *ENERGY FOR SURVIVAL*; *RAINBOOK*; *APPROPRIATE TECHNOLOGY SOURCEBOOK*; *FARMING*; *E-ENERGY PRIMER*; *ENERGY BOOK #2*.

- *OUR NATURAL RESOURCES* by Harry B. Kircher & P.E. McNall, 1976 (Interstate Printers & Publishers, Danville, Il.) 371 pages.
- *SENSIBLE SLUDGE* "A New Look at a Wasted Natural Resource" by Jerome Goldstein, 1977 (Rodale Press, Emmaus, Pa.) 184 pages.
- *COMPOSTING* "A Study of the Process and Its Principles" by Clarence G. Gollueke, 1976 (Rodale Press, Emmaus, Pa.) 110 pages.
- *COMPOSTING PRIVY*, Technical Bulletin #1, 1975 (Farallones Institute, Occidental, Ca.) 21 pages.
- *STOP THE FIVE GALLON FLUSH!* by Witold Rybczynski & Alvaro Ortega, 1976 (School of Architecture, McGill University, Montreal, Canada) 82 pages.
- *THE TOILET PAPERS* "Designs to Recycle Human Waste and Water: Dry Toilets, Greywater Systems & Urban Sewage" by Sim Van der Ryn, 1978 (Capra Press, Santa Barbara, Ca.) 124 pages.
- *SEPTIC TANK PRACTICES* by Peter Warshall, 1976 (Mesa Press, Bolinas, Ca.) 76 pages.
- *SEPTIC TANK PRACTICES* "A Guide to the Conservation & Re-use of Household Wastewater" by Peter Warshall, 1979 (Anchor Books, Doubleday, Garden City, N.Y.) 173 pages.
- *RURAL WASTEWATER DISPOSAL ALTERNATIVES*, Final Report - Phase I, September 1977 (State Water Resources Control Board, Ca.) 145 pages.
- *METHANE DIGESTERS FOR FUEL GAS AND FERTILIZER* "With Complete Instructions for Two Working Models" by John L. Fry & Richard Merrill, 1973 (The New Alchemy Institute-West, Pescadero, Ca.) 44 pages.
- *ABOVE-GROUND USE OF GREYWATER*, (Self Printed by Peter Warshall, no info.)

"To those on the land eking out an existence, I dedicate this unit. As a morsel of technology, it might well benefit them more than a man standing on the moon." *METHANE DIGESTERS FOR FUEL GAS & FERTILIZER*, p.31

"Contact with the air and with microorganisms in the soil and plants purifies the water so the end product passing through this living biological filter will be safe to drink. The sludge settling on lagoon bottoms is periodically dredged up and applied to adjacent soil as a conditioner. Crude variants of this type of treatment have been used for centuries. So-called sewage farms go back to the 15th century in Europe." *THE TOILET PAPERS*, p.104

"The physical effects of humus on the soil are perhaps more important than the nutrient effects. Soil structure may be as important to fertility as is its complement of nutrients. Soil aggregation or crumb tendency as promoted by humus improves the air-water relationship of soil, thus increasing the water retention capacity, and encouraging more extensive development of root systems of plants." *COMPOSTING*, p.71

"Raw sludge is produced in primary treatment of sewage by way of gravity settling. Digested sludge is sludge that has been subjected to anaerobic fermentation in a digester. Activated sludges are those produced in the aerobic secondary treatment of sewage." *SENSIBLE SLUDGE*, p.118

"Consumption of less food is a desirable goal for most Americans. We are the first great nation in the world whose population as a whole has suffered from eating too much rather than too little." *OUR NATURAL RESOURCES*, p.198

- *HOW TO GET WATERPROOFING SUBSTANCES FROM PLANTS* by Joseph H. Boatwright, 1977 (VITA Publications, Mt. Rainier, Md.) 11 pages.

"While the resins in sap and gums will dry to a fairly hard film, it is doubtful that the oils will dry at all. However, this will not detract in the least from their waterproofing capabilities. Due to this lack of drying, the oils will be effective waterproofing agents for a longer period of time." *HOW TO GET WATERPROOFING SUBSTANCES FROM PLANTS*, p.9

"Of the many kinds of agricultural soils, sand is one of the most challenging. Millions of tillable hectares of sandy soils, widely distributed throughout arid regions, are seldom used for agriculture because of their low productivity. Frequently, this low productivity is due to an inability to prevent water from percolating away too rapidly for plant growth.... Techniques have been developed to produce artificial underground moisture barriers that keep water and nutrients from percolating below the root zone ...Moisture barriers occur naturally in some deserts where, for example, sand overlies a less pervious loess soil and are often revealed by luxuriant growths of wild vegetation." *MORE WATER FOR ARID LANDS*, p.111

The books with water chapters include: *HANDBOOK OF HOMEMADE POWER*; *PRODUCING YOUR OWN POWER*; *MIAMI CONFERENCE PROCEEDINGS*; *NEW LOW-COST SOURCES OF ENERGY FOR THE HOME*; *ALTERNATIVE SOURCES OF ENERGY*; *ALTERNATIVE NATURAL ENERGY SOURCES*; *INTRODUCTION TO APPROPRIATE TECHNOLOGY*; *NATURAL ENERGY WORKBOOK#2*; *CLOUDBURST*; *PRODUCING YOUR OWN POWER*;

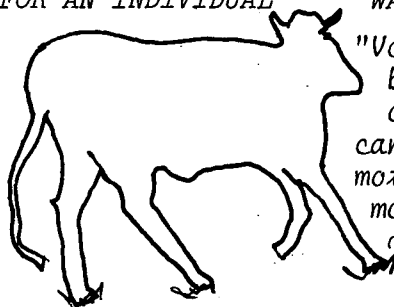
(to be continued)

RADICAL TECHNOLOGY; VITA TECHNOLOGY HANDBOOK; SURVIVAL SCRAPBOOK#3; ENERGY FOR MAN; ENERGY FOR SURVIVAL; SPECTRUM; APPROPRIATE TECHNOLOGY SOURCEBOOK; FARMING; TOOLS FOR AGRICULTURE; LIKLIK BUK; ENERGY PRIMER; ENERGY BOOK#2.

- *THE IMPACTS OF SNOW ENHANCEMENT* "Technology Assessment of Winter Orographic Snowpack Augmentation in the Upper Colorado River Basin," Leo W. Weisbecker, Compiler, 1974 (University of Oklahoma Press, Norman, Ok.) 624 pp.
- *MORE WATER FOR ARID LANDS* "Promising Technologies and Research Opportunities," 1974 (National Academy of Sciences, Washington, D.C.) 154 pages.
- *WATER WELL MANUAL* "A Practical Guide for Locating and Constructing Wells for Individual and Small Community Water Supplies" by Ulric P. Gibson & Rexford D. Singer, 1977 (Premier Press, Berkeley, Ca.) 156 pages.
- *MANUAL OF INDIVIDUAL WATER SUPPLY SYSTEMS* by the Office of Water Programs, Water Supply Division, 1975 (U.S. Environmental Protection Agency, Washington D.C.) 155 pages.
- *THE DESIGN OF WATER SUPPLY SYSTEMS BASED ON DE-* SALINIZATION
"Selection of plant sizes & associated storage facilities to meet variations in demand & plant outages" by the Department of Economic and Social Affairs, 1968 (United Nations Publication, N.Y.) 64 pages.
- *PLANNING FOR AN INDIVIDUAL WATER SYSTEM* by G. Henderson & Elmer Jones, 1973 (American Association for Vocational Instructional Materials, Athens, Ga.) 156 pages.
- *WATER SUPPLY SOURCES FOR THE FARMSTEAD AND RURAL HOME*, a Farmers' Bulletin No. 2237, 1971 (U.S. Department of Agriculture, Washington, D.C.) 18 pages.
- *USING WATER RESOURCES*, excerpted from the *Village Technology Handbook*, 1977 (VITA Publications, Mt. Rainier, Md.) 143 pages.

"If bamboo piping is to carry water for drinking purposes, the only preservative treatment recommended is boric acid ... After a bamboo pipe is put into operation, it gives an undesirable odor to the water. This, however, disappears after about three weeks." *USING WATER RESOURCES*, p. 87

"If you live on a farm, livestock watering and uses about the service buildings will add further to the peak demand. The total of all of these uses makes up the 'peak demand' the pump will need to supply even though that demand may not last more than a few minutes at any one time." *PLANNING FOR AN INDIVIDUAL WATER SYSTEM*, p. 75



"Voltage and current surges produced in powerlines by nearby lightning discharges constitute a serious threat to electric motors. The high voltage can easily perforate and burn the insulation between motor windings and motor frame. The submersible pump motor is somewhat more vulnerable to this kind of damage because it is submerged in ground water - the natural 'ground' sought by the lightning discharge." *MANUAL OF INDIVIDUAL WATER SUPPLY SYSTEMS*, p. 109

"A study of ecological conditions in winter led Needham and Jones to mortalities of trout populations result of lack of food or long likely causes were sudden disturbance under collapsed snow by "ice dams." *THE IMPACTS OF*

"Some of the water-short areas small islands where the geology underground storage of water. In water supply consists of a release water, which pervades the *OF WATER SUPPLY SYSTEMS BASED ON*

"Downward travel of bacteria through the water table has seldom been found to be in the natural direction of groundwater flow. The influence of a well upstream of the influence that includes the pollu-

"In soils having the permeability from the surface may extend may extend even deeper." *WATER SUPPLY SOURCES FOR THE FARMSTEAD AND RURAL HOME*, p.15

- *MICRO-HYDRO: CIVIL ENGINEERING* & S.N. Kiek at a Seminar on Rural Professional Engineers of Papua New Guinea (University of Technology) 11 pages.
- *LOW COST DEVELOPMENT OF SMALL WATER POWER SITES* (VITA, Inc., Mt. Rainier, Md.)
- *HARNESSING WATER POWER FOR HOME* (Charlton Way Publishing Co., Char-

"Wind wheels (for pumping water) bicycle to work on the power of cut off from an equivalent power engine during strong gales."

"The basic device is so simple by almost anyone who has the design which separate adequate those without sufficient technical training." *WATER WHEELS*, p.4

"The usual attitude is that, requiring adequate technical control." *MICRO-HYDRO: CIVIL ENGINEERING*

"Water along the banks of a stream flows slower than it does in the center. This is because the banks tend to resist the water flow. This resistance

conclude that the high winter they observed were probably not the periods of low temperatures. More imbalances, such as severe floods or silt banks or dewatering of stream sections *SNOW ENHANCEMENT*, p.302

in developing countries consist of is not favourable to the large-scale many of these cases the only fresh-water layer floating on top of whole of the substrata." *THE DESIGN OF DESALINIZATION*, p.29

ough homogeneous soil above the water be more than about 5 feet. Upon reaching the water table, the pollution travel takes place against the water flow unless induced by the pump-pollution source and with a circle of pollution source." *WATER WELL MANUAL*, p.135

ty of fine sand, bacterial contamination 20 feet down. In other formations, it *WATER SUPPLY SOURCES FOR THE FARMSTEAD AND RURAL HOME*

ASPECTS by D.S. Mansell, G.P. Atkins, et al Electrification, 1975 (Society of New Guinea & Papua New Guinea University of Technology) 11 pages.

WATER POWER SITES by Hans Hamm, 1977 43 pages.

ENERGY by Dermot McGuigan, 1978 (Garlotte, Vt.) 101 pages.

must be designed as if they were a toy a child, yet be able to withstand or source such as that from a motor car *CHINESE CHAIN AND WASHER PUMPS*, p.13

that a workable wheel can be constructed simple to try. However, the subtleties quite from inadequate models may escape casual training." *DESIGN MANUAL FOR WATER WHEELS*

rather than go to the bother of achieving it is better to risk failure." *MICRO-ASPECTS*, p.8

a stream flows slower than it does in the center. This is because the banks tend to resist the water flow. This resistance



of the channel." *PLANNING FOR AN IRRIGATION SYSTEM*, p.31

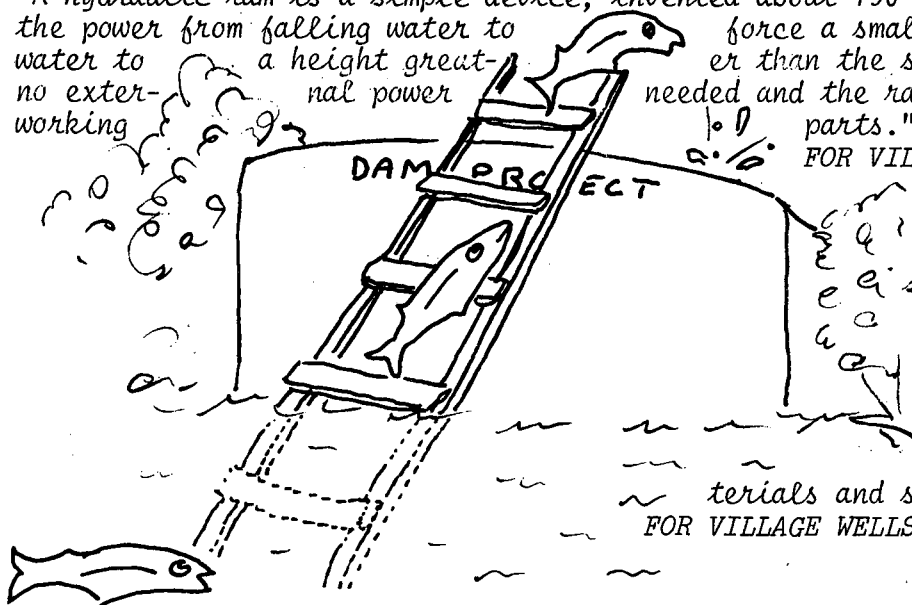
- *HANDPUMPS FOR VILLAGE WELLS* by C.D. Spangler, 1975 (VITA Publications, Mt. Rainier, Md.) 15 pages.
- *A HYDRAULIC RAM FOR VILLAGE USE* by Ersal W. Kindel, 1975 (VITA Publications, Mt. Rainier, Md.) 11 pages.
- *A MANUAL ON THE HYDRAULIC RAM FOR PUMPING WATER* by S.B. Watt, 1975 (Intermediate Technology Publications Ltd., London) 38 pages.
- *CHINESE CHAIN AND WASHER PUMPS*, Simon Watt, Compiler, 1976 (Intermediate Technology Publications, Ltd., London) 49 pages.
- *A DESIGN MANUAL FOR WATER WHEELS* by William G. Ovens, 1977 (VITA Publications, Mt. Rainier, Md.) 77 pages.
- *PLANNING FOR AN IRRIGATION SYSTEM* by J. Howard Turner & Carl Anderson, 1971 (American Association for Vocational Instructional Materials, Athens, Ga.) 107 pages.

"If a dam is built on a river frequented by such migratory fish as salmon or trout, a suitable fish pass or ladder must be constructed. It is only proper, as the fish have been using the river for a lot longer than we have..." *HARNESSING WATER POWER FOR HOME ENERGY*, p.69

- *DAMMING THE WEST* "Ralph Nader's Study Group Report on the Bureau of Reclamation" by Richard L. Berkman & W. Kip Viscusi, 1973 (Grossman Publishers, New York, N.Y.) 266 pages.

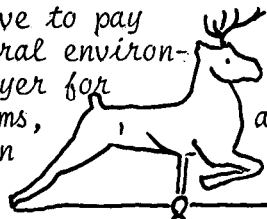
"Rams were built and used for nearly a century before any intensive research was carried out on their operational characteristics, and they seem to be almost foolproof in operation." *A MANUAL ON THE HYDRAULIC RAM FOR PUMPING WATER*, p.23

"A hydraulic ram is a simple device, invented about 150 years ago. It uses the power from falling water to force a small portion of the water to a height greater than the source... There is no external power needed and the ram has only two parts." *A HYDRAULIC RAM FOR VILLAGE USE*, p.1



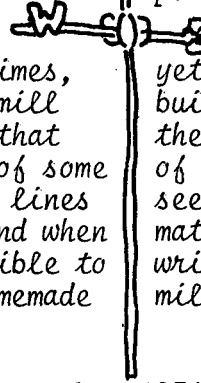
"Three possible pump designs are presented. These pumps are designed to be inexpensive, simple, easy to repair, and make maximum use of local materials and skills." *HANDPUMPS FOR VILLAGE WELLS*, p.5

"The American taxpayers have to pay plunder of the West's natural environment should be paying the taxpayer for mining up wild-running streams, dangerous weather modification unique species of Western of Reclamation even tried natural wonder - the Grand Canyon. at any price." DAMMING THE WEST



for the Bureau of Reclamation's ment. If anything, the Bureau flooding out scenic areas, dam- and engaging in ecologically dan- efforts, as well as threatening fish and wildlife. The Bureau to dam up America's greatest Such activity is hardly a bargain- p.209

"However impracticable and farmers may appear to be at times, this inventive movement (windmill demand, and who dares to say that not yet lead to the solution of some dual work along these diverse lines rather than discouragement, and when men it will doubtless be possible to cerning the success of the homemade MILLS OF NEBRASKA, p.37



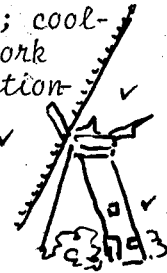
useless many inventions of our yet at all times it is apparant that building) is an attempt to meet a the sum total of these inventions may of our irrigation problems. Indivi- seems to be worthy of encouragement matter is worked out by practical write with still more enthusiasm con- mill." (In 1899) THE HOMEMADE WIND-

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- WIND POWER DIGEST, Copies #4 - March, 1976; #5 - June, 1976; #7 - December, 1976; #8 - Spring, 1977; #9 - Summer, 1977; #12 - Spring/Summer, 1978 (Mail Journal, Inc., Bristol, Ind.)
- AN INTRODUCTION TO THE USE OF WIND by Douglas R. Coonley, 1975 (Total Environmental Action, Harrisville, N.H.) 50 pages.
- THE HOMEMADE WINDMILLS OF NEBRASKA by Hinckley Barbour in 1899, 1976 (The Farallones Institute, Occidental, Ca.) 78 pages.
- WINDMILLS by Suzanne Beedell, 1975 (Charles Scribner's Sons, New York, N.Y.)
- HARNESSING THE WIND FOR HOME ENERGY by Dermot McGuigan, 1978 (Garden Way Publishing, Charlotte, Vt.) 134 pages.
- GENERATION OF ELECTRICITY BY WIND POWER by Edward W. Golding, 1976 (John Wiley & Sons, Inc., New York, N.Y.)
- PLANNING A WIND POWERED GENERATING SYSTEM, 1977 (Enertech Corporation, Norwich, Vt.) 46 pages.
- FOOD FROM WINDMILLS by Peter L. Fraenkel, 1975 (Intermediate Technology Publications Ltd., London) 57 pages.
- HOW TO CONSTRUCT A CHEAP WIND MACHINE FOR PUMPING WATER, "A Do-it-Yourself Leaflet No. L-5 of Brace Research Institute (McGill University, Quebec, Canada) 14 pages.
- WIND AND WINDSPINNERS "A Nuts and Bolts Approach to Wind/Electric Systems" by Michael Hackleman, 1976 (Peace Press, Culver City, Ca.) 138 pages.

"A window in your home is an example of a very sophisticated yet simple wind system. The window opening is the collector and convertor; the air

itself is the distributor; the atmosphere is the storage device; cooling or warming or ventilating your body and home and place of work is the energy use; your clothing or furnace or fan or air conditioner is the auxiliary system; the wall is the method of support; and the building is the place where the system is located." AN INTRODUCTION TO THE USE OF WIND, p.5



"When the wind blows, greenhouses more rapidly lose their heat, a problem that can be solved by insulating the greenhouse (especially the north side and at nightfall), and then adding a simple wind energy system to produce heat, replacing that which is being lost at the same time. In such a system there is no need for batteries or inverter, since all the current is simply fed into an immersion heater, similar to the heat element in a water tank." HARNESSING THE WIND FOR HOME ENERGY, p.76

"The anemometer should ideally be located within the mission compound on or near the river bank, as clear of the trees as possible. Although this is not completely in accordance with weather station specifications, it is consistent with the typical positioning of most wind-mills and should allow wind data to be related to wind-mill performance." FOOD FROM WINDMILLS, p.50

"Near the ocean, (which, acting as a large reservoir of heat, tends to stabilize weather to a very great extent), the wind pattern is quite consistent, and if there is generally an onshore evening breeze, one can begin to expect it evening after evening. In rough country, and particularly in places which are far from any great bodies of water, the wind tends to be extremely varied. Generally, however, in these, and in other situations, the wind tends to follow a recognizable pattern, (even if it is not exactly the same for all areas), during that month and year." WIND AND WINDSPINNERS p.9

- INVITATIONAL WELL-TESTING SYMPOSIUM PROCEEDINGS, Oct. 19-21, 1977, March 1978 (LBL Report No. 7027, UC-66, Berkeley, Ca.) 195 pages.

"Aquifers contain large amounts of water of a quality generally superior to that of surface water. It is naturally protected from surface pollution by confining layers or a non-saturated zone of variable thickness and by filtrating properties of soils. But increasing sources of contamination (factory disposal, nitrates, pesticides, nuclear waste disposal) are such that groundwater is not safe any more." INVITATIONAL WELL-TESTING SYMPOSIUM PROCEEDINGS, p.82

- OXFORD WORLD ATLAS, Cartographic Department/Clarendon Press, 1973 (Oxford University Press, London) 190 pages.
- OXFORD ECONOMIC ATLAS OF THE WORLD, Cartographic Department/Clarendon Press 1972 (Oxford University Press, London)

There are windy chapters in: HANDBOOK OF HOMEMADE POWER; PRODUCING YOUR OWN POWER; MIAMI CONFERENCE PROCEEDINGS; NEW LOW-COST SOURCES OF ENERGY FOR THE HOME; ALTERNATIVE SOURCES OF ENERGY; ALTERNATIVE NATURAL ENERGY SOURCES; LIVING WITH ENERGY; SOFT-TECH; INTRODUCTION TO APPROPRIATE TECHNOLOGY; CLOUDBURST; THE MOTHER EARTH NEWS NO.36; SOFT ENERGY PATHS; RAYS OF HOPE; OTHER HOMES & GARBAGE; NATURAL ENERGY WORKBOOK #2; ENERGY WE CAN LIVE WITH; PRODUCING YOUR OWN



POWER; RADICAL TECHNOLOGY; SURVIVAL
 TER; ENERGY FOR MAN; ENER- GY
 TECHNOLOGY SOURCEBOOK;
 TURE; LIKLIK BUK; ENERGY PRIMER;

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For a little more on geothermal,
 ENCE PROCEEDINGS; ALTERNATIVE SOURCES OF E-
 WE CAN LIVE WITH; CALIFORNIA ENERGY TRENDS &
 SURVIVAL.

**



SCRAPBOOK #3; KILOWATT COUN-
 FOR SURVIVAL; APPROPRIATE
 SPECTRUM; TOOLS FOR AGRICUL-
 and ENERGY BOOK #2.

**

SUN, EARTH; MIAMI CONFER-
 ENERGY; SOFT-TECH; ENERGY
 CHOICES; ENERGY FOR
 SURVIVAL.

**

"There is now convincing evidence that the original Atlantis may have been the volcanic island of Santorin, now consisting of five islands, including Thera, about 125 km north of Crete... It is now widely believed that the civilization was destroyed when Santorin exploded in a tremendous volcanic eruption that occurred about 1500 B.C." *THE WAY THE EARTH WORKS*, p.214

"Those of us who are interested in studying the undersea world have some concern just now about the possibility that man may soon start dumping radioactive wastes from atomic energy plants in the deep sea. Such deposits on the ocean bottom might change its living population as drastically as the cold of the ice age." *CONDITIONS FOR LIFE*, p.214

In the course of thousands of millions of years of geological history, temperatures in the Earth's interior cannot have decreased significantly. Its conductive power is very low." *THE ORIGIN OF THE SOLAR SYSTEM*, p.125

"Anyone who has heard a chorus of wolves, gathered on some moonlight night to sing from the top of a tundra knoll (not a love call, since this is group singing), will be haunted for life by the thrilling wild harmonies." *WILD HERITAGE*, p.214

- *THE WAY THE EARTH WORKS* by Peter J. Wyllie, 1976 (John Wiley & Sons, New York, N.Y.) 296 pages.
- *THE FAMILY OF THE SUN* by S.T. Butler & Robert Raymond, 1975 (Anchor Books, New York, N.Y.) 84 pages.
- *YOUR ENVIRONMENT* (text) by Collins M. Henson, 1971 (Interstate Printers & Publishers, Danville, Il.) 206 pages.
- *CONDITIONS FOR LIFE*, Readings from *Scientific American*, Aharon Gibor, Ed., 1976 (W.H. Freeman & Co., San Francisco, Ca.) 256 pages.
- *THE ORIGIN OF THE SOLAR SYSTEM* by H.P. Berlage, 1968 (Pergamon Press, Ltd., London) 130 pages.
- *WILD HERITAGE* "Human Behavior Revealed Through the Games Animals Play" by Sally Carrighar, 1976 (W.H. Freeman & Co., San Francisco, Ca.) 256 pages.
- *DARWIN'S CENTURY* by Loren Eiseley, 1961 (Anchor Books, New York, N.Y.) 378 pp.

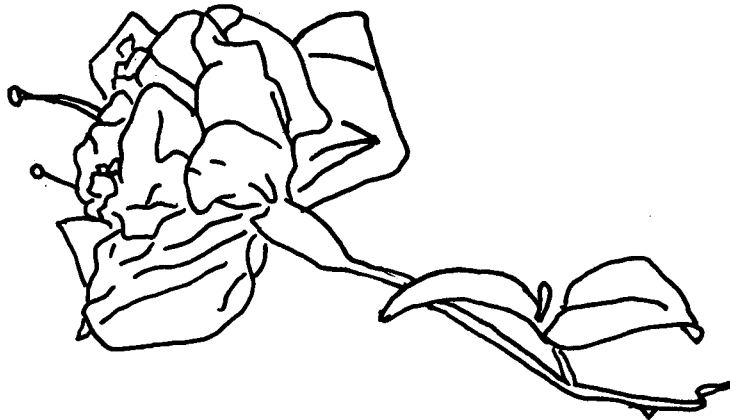
"Perhaps there was something appropriate, in the end, about the fact that Wallace was a searcher after birds of paradise & that he was a butterfly hunter among the islands of the Coral Sea. He loved beauty, and among the many rarities he came to cherish was the potential moral beauty of man. He found it among simple people & it never passed away from his heart." p.324

DARWIN'S CENTURY

Here are a list of books that arrived too late to be placed on their proper pages.

- *ALTERNATIVE SOURCES OF ENERGY*, A Periodical, Special Issues: *Agriculture and Energy* should be on page 45; *Solar Heated Greenhouses* should be on page 43; and *Wood Heat* should be on page 52 (Alternative Sources of Energy, Inc. Milaca, Mn.).
- *BIOLOGICAL RECLAMATION OF SOLID WASTES* by Clarence G. Golueke, 1977 (Rodale Press, Emmaus, Pa.) 249 pages, should be on page 54.
- *BUILD YOUR OWN SOLAR WATER HEATER* by Stu Campbell, 1978 (Garden Way Publishing, Charlotte, Vt.) 109 pages, should be on page 34.
- *DESIGN MANUAL FOR SOLAR HEATING OF BUILDINGS & DOMESTIC HOT WATER* by Richard L. Field, 1977 (Solpub Co., Gaithersburg, Md.) 86 pages, should be on page 34.
- *ECOTOPIA* by Ernest Callenback, 1977 (Bantam Books, New York, N.Y.) 213 pages, should be on page 22.
- *ENERGY FOR RURAL DEVELOPMENT*, 1976 (National Academy of Sciences, Washington, D.C.) 306 pages, should be on page 3.
- *GLOBAL EMPLOYMENT & ECONOMIC JUSTICE: THE POLICY CHALLENGE*, *Worldwatch Paper #28* by Kathleen Newland, April 1979 (Worldwatch Institute, Washington, D.C.) 47 pages, should be on page 12.
- *HOW TO DESIGN AND BUILD A SOLAR SWIMMING POOL HEATER* by Francis de Winter, 1975 (Copper Development Association, Inc., New York, N.Y.) 46 pages plus pamphlets, should be on page 34.
- *HOW TO SAVE MONEY by Using Less Electricity, Gas & Water "A Do-It-Yourself Guide"* by the Lawrence Berkeley Laboratory, Publication 228, should be on page 24.
- *METHANE GENERATION FROM HUMAN, ANIMAL, AND AGRICULTURAL WASTES*, 1977 (National Academy of Sciences, Washington, D.C.) 131 pages, should be on page 54.
- *MOTHER EARTH NEWS, THE*, A Periodical, Issues No. 55 - Jan/Feb, 1979; No. 56 - Mar/Apr, 1979; and No. 57 - May/Jun, 1979 (Self-published in Henderson, N.C.) should be on page 28.
- *PACIFIC ISLANDS MONTHLY*, V. 50, No. 2, February 1979 (Pacific Publications, Australia) should be on page 10.
- *PASSIVE SOLAR ENERGY BOOK, THE* by Edward Mazria, 1979 (Rodale Press, Emmaus Pa.) 435 pages, should be on page 37.
- *PLANNING A WIND POWERED GENERATING SYSTEM*, 1977 (Enertech Copr., Norwich, Vt.) 46 pages, should be on page 59.

- *POLLUTION: THE NEGLECTED DIMENSIONS*, *Worldwatch Paper #27* by Denis Hayes, March 1979 (Worldwatch Institute, Washington, D.C.) 32 pages, should be on page 13.
- *PRESENT VALUE "Constructing a Sustainable Future"*, 1979 (Office of Appropriate Technology, Sacramento, Ca.) 46 pages, should be on page 29.
- *REPORT ON 1978 ENERGY CONSERVATION ACTIVITIES*, March 31, 1979 (P.G. & E., San Francisco, Ca.) 85 pages, should be on page 24.
- *RESOURCE TRENDS & POPULATION POLICY: A TIME FOR REASSESSMENT*, *Worldwatch Paper #29* by Lester R. Brown, May 1979 (Worldwatch Institute, Washington, D.C.) 55 pages, should be on page 12.
- *SEPTIC TANK PRACTICES* by Peter Warshall, 1979 (Anchor Press, Garden City, New York, N.Y.) 177 pages, should be on page 54 with the shorter edition.
- *SISTERHOOD OF MAN, THE* by Kathleen Newman, copyrighted by *Worldwatch Institute*, 1979 (W.W. Norton & Co., New York, N.Y.) 242 pages, should be on page 12.
- *SOLCOST "Solar Hot Water Handbook"*, June 1977 (ERDA, Washington, D.C.) 15 pages, should be on page 34.
- *WIND POWER DIGEST*, Copy #15 - Spring, 1979 (Mail Journal, Inc., Bristol, Ind.) should be on page 59.
- *WORKER PARTICIPATION - PRODUCTIVITY & THE QUALITY OF WORK LIFE*, *Worldwatch Paper #25* by Bruce Stokes, December 1978 (Worldwatch Institute, Washington, D.C.) 48 pages, should be on page 12.



Two works that are not a part of the library were mentioned in the body of this bibliography. The book on the readability of petroglyphs is: *THE ROCKS BEGIN TO SPEAK* by La Van Martineau, 1973 (K.C. Publications, Las Vegas, Nv.) and Robert Frost's poem "The Gift Outright," found in The Introduction is in many of his works. *THE POETRY OF ROBERT FROST*, Edward C. Latham, Ed., 1967 (Holt, Rinehart & Winston, New York, N.Y.) includes all eleven Frost books.

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