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Self-Reliance

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District Heating: Choice between 'Hard' and 'Soft' Path Technology

District heating, like alcohol fuels, is one of the few "alternative" energy strategies receiving serious attention from the energy establishment and government policy makers. But like alcohol fuels, the technology itself does not guarantee that district heating will be small-scale, community-controlled and environmentally sound. As with most energy options, district heating poses a "soft" or "hard" path, with opportunities to go either way or somewhere in between. Predictably, the emphasis so far has been on capital-intensive, privately managed district heating systems based on non-renewable energy sources like coal and oil. As currently proposed, the technology is quite compatible with nuclear power, and may even boost this sagging industry by providing an outlet for a nuclear generator's excess capacity. Some district heating projects, however, provide real alternatives to traditional energy planning and foster local self-reliance. Several systems already at work in Scandanavia and experimental designs in this country are based on renewable energy, produce heat near the point of consumption, and integrate with an overall plan for maximum energy efficiency.

District heating is simply any process of supplying heat to a number of separate buildings from a central plant.* Suppliers deliver either steam or hot water through pipes directly to customers. The key to recent interest in district heating is cogeneration, in which exhaust heat from electric generation plants (which would otherwise go to waste) is used to heat the water or steam carried through the district heating system. When district heating cogeneration is retrofitted in electric power plant operations, energy efficiency can increase from about 33 percent (electricity only) to 60 to 80 percent efficiency (electricity plus heat). In many cases, the hot water or steam delivered to consumers can replace costly oil or natural gas.

District heating is not a new concept. The process was developed in this country more than a century ago—and widely used in large American cities, mostly in the Northeast. District heating was curtailed with the development of large electrical generation plants outside of cities, made economical by cheap fossil fuels and economies of scale. Several large American cities, however, still maintain modest district heating systems, mostly for large commercial customers. In Europe, where fossil fuel has always been more expensive, many cities fill most of their demand for heat through district heating. As the price of oil and gas rises, the incentive to build and expand district heating systems powered by alternative fuels increases.

*District cooling can often be provided through the same system designed for district heating.

There are three major components in any district heating system: the heat source, the network of pipes which distributes heat from the power plant to the buildings, and the method for distributing heat within the buildings. At each stage in the system, the temperature of the heat distributed directly relates to the kind of technology used. High temperatures require certain energy sources, as well as special pipes and heat exchangers to distribute and release the heat. Low temperature systems can use different energy sources and hardware.

There is no one temperature which is best for district heating, but there are many reasons to keep temperatures as low as possible*:

- distribution pipes, which account for up to 75 percent of the capital cost of district heating, are much cheaper for low temperature systems.
- when district heating is fueled through cogenerators (the simultaneous production of heat and power), low temperature heating does not cut into the efficiency of the power production as much as high temperature heating does.
- low temperature systems are compatible with renewable energy sources like solar and geothermal energy. Other low temperature energy sources, such as industrial waste heat, refuse incineration and even sea-water and ponds can also contribute heat (with the aid of heat pumps) to low temperature district heating systems.
- low temperature district heating can encourage small-scale systems, with energy production close to energy consumption (to minimize heat loss over distance).
- low temperatures encourage overall energy efficiency, because buildings using low temperature district heating must be well-insulated and designed to make best use of natural solar energy.

Scandanavians Move to Low Temperature Systems

Although low temperature systems can carry heat at higher temperatures, the reverse is not usually true. Once a system has been designed for high temperatures, (without attention to end-use efficiency) low temperature heat sources such as solar may no longer economically contribute significant amounts of heat to the total system. It is important, therefore, that district heating systems be designed with maximum en-

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*A conventional district heating system distributes temperatures of about 120°C/250°F Maximum. Swedish solar district heating systems, however, work at a maximum of 60°C/140°F. It has been suggested that supply temperatures could go as low as 40°C/104°F and still effectively meet the heat requirements of buildings supplied by a district heating system.

Notes

A list of 23 private foundations which have funded projects in community energy planning has been published in the November 1980 issue of the *Grants Newsletter*. Some of the foundations fund projects only in their own local area, but several consider proposals from around the country. Free copies of the newsletter are available from: **California Office of Appropriate Technology, 1530 10th Street, Sacramento CA 95814, 916/445-1803.** Also available from California OAT is *Working Together: Community Self-Reliance in California*, which describes a wide range of efforts Californians have undertaken to develop local social and physical resources to meet local needs. Single copies of *Working Together* are free.

Our directory of community organizing training schools failed to note the new address of the New England Training Center for Community Organizing. The correct address is NETCCO, 235 Promenade Street, Building I, Room 210, Providence RI 02908.

As direct marketing of food between producers and consumers expands, so does literature on the subject. *Direct Marketing Guide* is the third publication on direct marketing we've seen recently, and for the price (free) it is the best. The heart of the 155-page booklet explains various kinds of direct marketing (not just farmer's markets) and includes a solid "how-to" section. Non-California residents will not get much from the considerable resource listings of state technical assistance and regulatory organizations. Contact: **California Department of Consumer Affairs, 1020 N Street, Sacramento, CA 95814, 916/445-1254.**

We recently reported on an integrated pest management program in Modesto, California that cut pesticide use 98 percent and lowered operating costs—without increased tree loss. Now a short handbook has been published that can help local officials and citizen groups duplicate the Modesto program in their own communities. *Integrated Pest Management on City Shade Trees* describes the basics of the IPM program and lists common city shade tree pests and predators. Copies are free from: **Debby Miller, Center for the Integration of Applied Sciences, the John Muir Institute, 1010 Grayson Street, Berkeley, CA 94710, 415/540-8912.**

Dozens of groups have developed vacant land in their neighborhoods into community gardens and parks. A new manual, *Citizens' Guide to Maintaining Neighborhood Places,* offers tips on organizing these efforts, examples of successful projects and an extensive reading list on the subject. This booklet supplements last year's *Citizen Action Manual: A Guide to Recycling Vacant Property in Your Neighborhood,* which is still the definitive work. Both were written by the trust for Public Land and are available free from: **Heritage Conservation and Recreation Service Information Exchange, Division of P.A.R.T.S., 440 G Street NW, Washington DC 20243, 202/343-6767.**

March of "Progress" . . .

Too Simple to Sell: Exxon is selling its flat plate collector business—Daystar, having decided the low-technology approach offers too few opportunities for growth. Over the past six years, Exxon has sunk about $30 million on the flat plate collector operation, which has a two to three percent share of the medium temperature market. According to an Exxon spokesperson, the company will continue research in "high technology industrial applications of solar thermal systems" more in keeping with Exxon's high-capital, high-tech management style.

Appropriate Technology for the Dead: A solar powered tombstone recorder is now available to those who would like to leave a recorded epitaph or a self-made eulogy. The recorder fits compactly into a tombstone and runs on a small photovoltaic unit. The long life of photocells ensures that the "memorial audio reproduction system" will be running long after you would otherwise be forgotten. Stanley Zelazny of Pleasantown, California, designed and built this system and predicts that some day tombstones will have solar powered audio tape color TV for "instant replays" of an individual's life.

Appropriate Nukes?: Canada's government-owned nuclear company is developing a nuclear power plant so small it says the device can be put into basements to replace conventional furnaces. By cutting down the size, the Canadians claim the mini-nuke is safer—"inherently safe" is the term they use—than the gargantuan models now being built. According to the designers, the plant uses minute amounts of radioactive material to generate only hot water, not the high-pressure steam needed to turn huge turbines. This means the simple design doesn't need expensive and potentially faulty safety systems or continuous on-site monitoring. Nevertheless, the mini-nuke company realizes the sale of basement nukes may be sluggish in Canada and the U.S. It plans to market most of the devices overseas.

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Making a Case for Landfill Salvage

*The following is excerpted from **Gone Today, Here Tomorrow**, a booklet on landfill salvage to be published by the Institute for Local Self-Reliance this spring.*

by Dan Knapp

The "out of sight, out of mind" attitude is powerfully reinforced by regulations that prohibit or discourage the salvage of materials at garbage dumps. These regulations exist at almost every dump in the country, though it is hard to understand why. Landfill salvage increases local employment, reduces waste flow, extends the life of landfills and recaptures energy contained in materials. Without salvage, valuable resources are lost forever, and citizens are taxed to pay for the destruction.

Down at the dump, the ban on salvage is not usually supported with a list of reasons. Instead, what people see is a sign saying "No Salvage." There is obviously no point in asking questions of a sign, and for most people, the sign is enough to prevent further inquiry. Those who take the time may find the ban is backed by a local ordinance, which can be looked up in the county or city code. But finding the legal authority still doesn't explain the prohibition; after all, laws are not reasons.

The case against landfill salvage becomes more puzzling when we remember how dumps were usually run in days gone by. Then, most communities salvaged everything they could before burning and eventually covering the rest. The small dump, often run by a local resident, was the norm before the current age of extensive regulation and solid waste bureaucratization. It makes one think that, left to themselves, local communities act to minimize waste.

Working at or near landfills and talking with people who use them reinforces this idea. Again and again, one hears someone say: "Now why would anyone want to throw that away!" Where salvage is allowed, moreover, a salvage worker soon learns that he or she can set materials aside for recycling or resale with an 80 to 90 percent chance for cooperation. Most people are glad to see the materials saved from destruction; they do not like the idea of being forced to waste things, and they adapt quite readily to procedures that permit more aggressive recycling and salvage. If people gain employment and solid waste disposal costs are reduced, so much the better!

Dan Knapp designed and now helps manage a profitable salvage operation at the Berkeley, California landfill.

The EPA Campaign Against Landfill Salvage

So if communities have a tradition of landfill salvage and people are still willing to salvage, why do so few landfills allow it? You might ask the folks at the U.S. Environmental Protection Agency (EPA) which over the past 20 years has increasingly called the shots on local waste management policy.

EPA publishes hundreds of books on solid waste and many on landfills. But it has nothing on landfill salvage. EPA distributes a free eight-volume set of books, complete with flowcharts and engineered systems layouts for a variety of mechanized "resource recovery" plants, including prominent mention of manufacturer's trade names. But there is no manual for setting up front-end recycling at a landfill or transfer station, no review of tools and technology for "surface mining" and no model contracts with local producer cooperatives or small recycling contractors.

Most of the EPA material that does relate to salvaging emphasizes marketing, not collection. Often the "salvage" described is machine processing of mixed wastes, not metals highgrading or wood salvage or soil reclamation. And so, although landfill salvage and scavenging has never died out entirely in the United States, our federal waste management agency does not acknowledge that it exists as a practice or

(Continued on page 4)

Making a Case for Landfill Salvage

(Continued from page 3)

a possibility. EPA has no operational statistics, no design reviews and no case studies of successful enterprises. In short, there is an informational void in EPA's otherwise voluminous field of resources on solid waste management.

*Sanitary Landfill Design and Operation** is the basic how-to manual that EPA's Office of Solid Waste Management uses to spread the gospel on approved sanitary landfilling practices. Most of the book discusses speedy and efficient disposal, with drawings showing a variety of burial techniques, photos of compacting and spreading equipment, and even details on dosage rates for pesticides to kill off insects and make the landfill more "sanitary." The booklet has been available since 1972 and has been reprinted at least once. Total distribution is unknown, but it can probably be found in the offices of most American solid waste and public works officials.

Sanitary Landfill Design and Operation clearly reflects EPA's fear of giving landfill salvage its due. The book carries less than half a page on the subject, and there are no illustrations at all.

Far worse than the paucity of information, however, is the misinformation, ignorance and sheer prejudice that the authors manage to convey in the few short paragraphs where salvage is mentioned. Almost everything they say about the subject is questionable, wrong or contradictory.

The section on "Salvaging and Scavenging" is the last in the chapter on landfill operation, right after "Fires." It is worth quoting and critiquing in full.

> *Salvaging usable materials from solid waste is laudable in concept, but it should be allowed only if a sanitary landfill has been designed to permit this operation, and appropriate processing and storage facilities have been provided. (page 38)*

The authors do not tell us where to go to see an acceptably designed salvaging facility, however, and they do not give any guidance in deciding what "appropriate processing and storage facilities" might be like. We already know from looking over EPA titles on solid waste that no other publication, manual or guide exists.

> *Scavenging, sorting through wastes to recover seemingly valuable items, must be strictly prohibited.*

Why use the word "seemingly" to qualify valuable items? Experience shows that even minimal labor-intensive front-end recycling systems at moderate-sized landfills (250 to 300 tons per day) can generate revenues of $5,000 to $8,000 per month with virtually no capital investment (see box, below). Monthly diversions can be as high as 150 tons or more, and considering that white goods, metals, structural lumber, firewood-sized logs, rugs and furniture, etc., are among the most difficult wastes to push and compact, as well as the most desirable and dependable producers of revenue, the overall positive impact of large-scale front-end recycling on the operations of a landfill could be significant. Admittedly, sorting through mixed wastes does not sound like a pleasant job, but it is not all that bad in practice. And it is never boring. Besides, there are ways to cut the need to hand-sort mixed wastes. The most obvious is the use of buy-back or reduced-charge systems within the landfill to monetarily reward effective recycling behavior, coupled with a program to teach the public to use source-separate procedures and systems.

> *All salvage proposals must be thoroughly evaluated to determine their economic and practical feasibility. Salvaging is usually more effectively accomplished at the point where waste is generated or at specially-built plants.*

Here again, EPA gives a little, then takes even more away. Any community that wants to salvage will have to write a proposal, but no criteria are given to judge "economic and practical feasibility." No suggestions are offered on how to conduct a fair and open competition for salvage rights. And no mention is made of the considerable and immediate flow of revenue that can begin when the landfill changes from a dump into a marketplace.

*Sanitary Landfill Design and Operation (SW-287) is available free from most regional offices of the U.S. Environmental Protection Agency or from: Solid Waste Information, U.S. EPA, Cincinnati OH 45268, 513/684-5362.

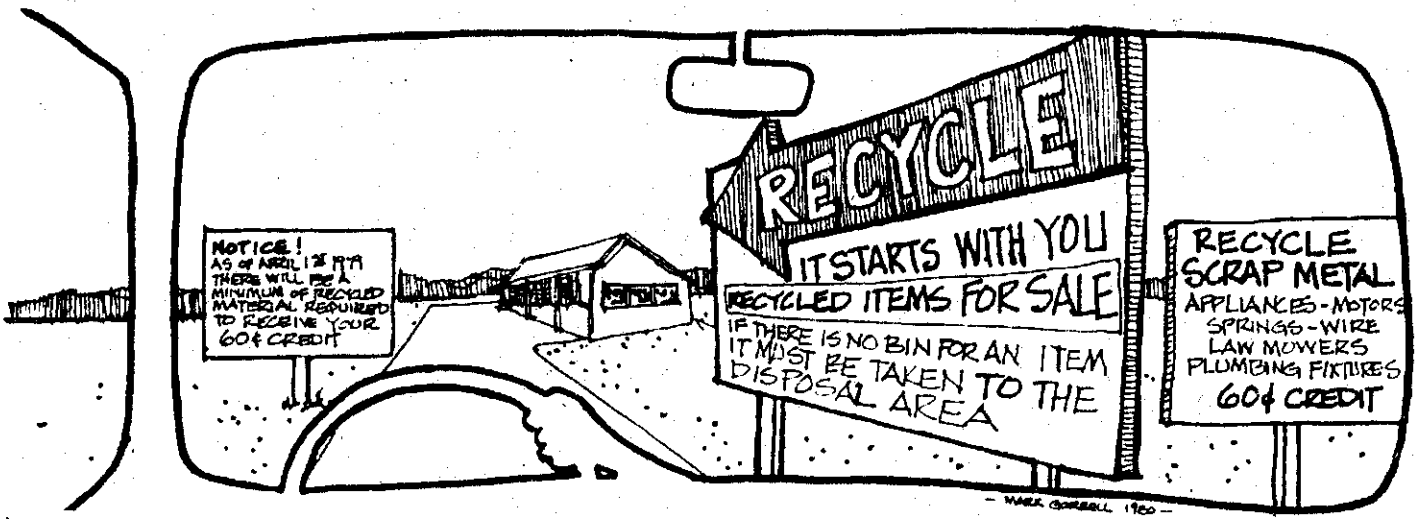
Three tests of highgrading

Highgrading describes the process of separating and classifying reusable and recyclable material just before final disposal in a dump or incinerator. Highgrading practitioners describe it as an art, both labor and skill-intensive. When well-managed, highgrading can produce more revenue in less time than most other forms of recycling. Highgrading also extends the life of landfills, saving replacement costs.

Because highgrading is non-existent or openly discouraged in most communities, there have been few quantifiable tests of its potential. The following case studies, prepared by Dan Knapp to summarize three "tests" of the concept, demonstrate highgrading's variety and potential. A more detailed report on three years of highgrading research, culminating in the "resource recovery depot" concept developed in Berkeley, California, will be included in *Gone Today, Here Tomorrow*, a booklet on landfill salvage to be published by the Institute for Local Self-Reliance in the spring.

Test #1: One of the first controlled tests of highgrading took place at the Lane County, Oregon Glenwood Transfer Station beginning in May 1975. With a $600 budget for tools and supplies from Lane County's Office of Appropriate Technology, several recyclers upgraded the county's already existing metals recycling program. Before the test, the county sold the small amount of metal that wasn't dumped for about $23 a ton (it was one of the lowest grades of scrap purchased by metal dealers). The highgrade recyclers changed two things. First, they separated as much of the metal as they could into clean categories based on industry specifications, to fetch higher prices. Second, they encouraged more people who used the transfer station to recycle. The key was a "spotter" who looked over loads before they were dumped and targeted material for an on-site worker, who processed it into various storage bins. The effort produced an immediate doubling in metals recycling. At the end of ten weeks, the recyclers had diverted about 70 tons of materials from the dump, producing just over $3,200 in revenue. Factoring in operating expenses, the project just about broke even in its first (and only) 10 weeks. Revenues increased each week and were significantly above expenses by the end of the test.

Test #2: A one-day "community clean-up" campaign in the small town of Dexter, Oregon, proved that highgrading does not have to be costly or complicated to produce significant results. Many local communities organize periodic clean-ups where trash—usually bulky items and yard waste—are collected and hauled to the dump. Lane County Office of Appropriate Technology recyclers, however, convinced town officials to turn its town clean-up campaign into a one-day test of highgrading. All promotional literature for the campaign emphasized that a temporary recycling center would receive, sort and sell metals and other recyclable material. Two volunteer workers, using a single truck and a roofed bin, highgraded three tons of material in one day. Not only was the material diverted from the local dump, but



The second sentence is prejudicial and ignores reality: it is precisely because source separation is not effectively practiced at the point of waste generation that landfill salvage becomes necessary as a last resort. The phrase "specially-built plants" begs the question, for a recycling plant can be "specially-built" at a landfill as easily as anywhere else.

We are left with the conclusion that, though proposals may be written, they will always compete at a disadvantage with an imaginary salvage facility located somewhere other than at a landfill. This is a formula for frustration and burnout of people who are working toward more effective and complete recycling systems at landfills.

The capital and operating cost of salvage operations at a disposal site are usually high, even if it is properly designed and operated.

This is completely false. Capital and operating costs can be as little as a bag of tools for separating materials and a piece of the landfill's surface for storage of bins and barrels. Materials buyers will often supply and service large containers in exchange for a contract to buy the materials that are collected. And for second-hand sales, not even the tools or containers are necessary; only the surface for temporary storage and a place for the customers to park while they shop. People love bargains, and they like the unexpected find. Experience shows that significant tonnage diversions are possible with absolutely minimal capital.

Even the most elaborate and complete front-end recycling system imaginable would cost only a fraction of what a garbage-to-energy plant costs, and may even cost less than the equipment necessary to run an efficient sanitary landfill, especially when long-term operating and maintenance costs are factored in. So it is just not true that capital costs for scavenging are high. Quite the opposite is the case.

Scavengers are too intent on searching to notice the approach of spreading and compacting equipment, and they risk being injured. Moreover, some of the items collected may be harmful, such as food waste, canned or otherwise; these items may be contaminated. Vehicles left unattended by scavengers interfere with operations at the fill.

This section is insulting to the intelligence of both the scavenging profession and the reader. Spreading and compacting equipment is large, noisy, intrusive and easily avoided when its drivers are not coached (as does EPA) to destroy salvageable items "immediately . . . to keep them off the market." Equipment operators can be trained to work safely around scavenging activities, just as they learn to avoid running over workers at construction sites. Parking spaces can be provided for cars. Bright and protective clothing can be worn.

If EPA wants to say something about landfill safety, it should try explaining why by far the most frequent and serious accidents at landfills result from vehicles and people falling into the disposal pit. It is the typical landfill design, which EPA now immortalizes in concrete wherever new transfer stations are built, which causes the most accidents.

It is also true that landfill salvage work is insurable, just like any other form of labor in the economy. The question of who is liable for accidents can be dealt with through normal procedures for occupations of comparable hazard. Management and incentives can be contracted for, job descriptions and standard operating procedures outlined. Again, experience shows that management is not a major problem with landfill salvage.

Not unless you count utterly hostile and misinformed statements such as the ones just critiqued. And objections from the U.S. Environmental Protection Agency can be formidable, particularly in communities counting on substantial amounts of federal money. Local administrations are quick to fall in line with what they take to be official federal thinking when grants and subsidies may be held up because sanitary landfill or sewage disposal facilities are not operating in the approved manner.

revenue from resale helped pay for a community outdoor barbecue and square dance the next day.

Test #3: The test at Rattlesnake Transfer Station, one of ten rural sites in Lane County, Oregon, attempted to project the feasibility of a full-scale highgrading operation based on short-term scans and samples of waste being dumped there. At the time of the test in 1978, Rattlesnake received an average of 210 tons of garbage each month. The cost of maintaining the site and transfer of garbage to a central dump was estimated at $1476 per month. Based on the observations and samples, recyclers estimated that up to 70 percent of the tonnage at Rattlesnake (and 87 percent of the volume) could be highgraded away from the dump. Recyclable materials were then broken down into nine categories, with projected average tons per month. Using current prices per ton for the particular type of material, potential monthly revenue from the dump was found to be $4590. To compute the real benefits of highgrading at Rattlesnake, recyclers also added in a "landfill diversion credit" — the cost saved by diverting material away from the dump. At Rattlesnake, the credit would be $7 per ton ($1476 average monthly transport costs divided by 210 average monthly tonnage received.) Thus, a highgrading operation diverting 141 tons per month (70 percent of the total) is saving $987 a month in disposal costs. With a potential monthly revenue of $4590 and a landfill diversion credit of $987, the gross monthly value of highgrading at Rattlesnake would be $5567. Subtract $400 for the cost of separating the remaining material, and highgrading is adding $5167 a month to the local economy.

Solar District Heating Encourages Self-Reliance

(Continued from page 1)

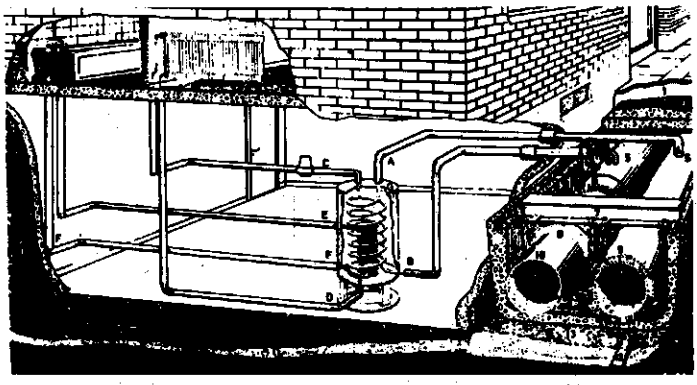
ergy efficiency—providing only the lowest temperatures required. Higher temperature systems would not be as economical or efficient and would be extremely costly to modify.

District heating is well advanced in Scandanavia, and it is from there that American energy planners are drawing most of their ideas.

Before the 1973 OPEC price hike, most European district heating systems were fired by oil. Since then, many systems have shifted to coal, but a number of other fuel sources have been investigated as well. Denmark, for example, burns 60 percent of the country's urban waste for the production of district heat. Another energy source for low temperature district heating has been industrial "surplus" heat. This occurs in industries which require high temperatures in their manufacturing processes, but which seldom use the leftover or degraded heat. In many cases, the same energy can be used three times by "cascading" power from the production of electricity to process heat to district heat.

Low temperature heat is available in surprisingly large quantities from a wide range of other sources. Sewage treatment water and even sea-water, lakes and underground water can carry heat in the 40°F to 100°F range. If a district heating system is designed to work with temperatures with a low range of 120°F to 140°F, these sources of heat can be tapped efficiently with the help of heat pumps. The pumps, powered by some primary energy in the form of electricity, or direct heat from fossil or renewable fuels, can extract heat from low temperature sources and boost it to required levels. District heating systems using low temperature energy sources and heat pumps are increasingly used in Denmark and Sweden.

The most dramatic experiments in low temperature district heating systems to date are the solar heating projects in Sweden. Currently, four solar-based district heating systems are operating, and several others are planned. They range in size from a single-two story office building to a proposed new development of 2000 houses completely dependent—summer and winter—on solar district heating for all hot water and space heating requirements.



1. Gravel/sand layer
2. Asphalt. Bitumen melting
3. Concrete cover
4. Service connection. Plastic culvert with mantle of PEH or PVC and insulation of mineral wool, polyurethane etc.
5. Mains
6. Mineral wood insulation with plastic film over upper half
7. Pipe support: steel joist, pendulum and support ring
8. Steel pipe
9. Supply main: 80-120 C
10. Return main: 50-70 C
11. Prefabricated trough section of reinforced concrete
12. Plastic drainage pipe
13. Macadam

A = Supply main. Max. 120 C
B = Return main. Max. 80 C
C = Radiator system. Approx. 80 C
D = Radiator system. Approx. 60 C
E = Tap water. Max. 65 C
F = Cold water. Approx. 5 C
G = Heat exchanger: diagramatic

Fig. 8—Section through a typical street culvert in Malmo. Malmo Technical Authority. (We regret that some of the above referenced numbers and letters are not visible on the illustration, which was the only one available to us. Editor)

This design shows how Swedish district heating pipes bring heat and hot water from a central power source to individual buildings.

The key to these projects is interseasonal thermal storage—trapping surplus summer solar heat and storing it for use during winter months. Heat is collected either in insulated hot water storage pits or tanks, and is sometimes boosted with electrically driven heat pumps or small amounts of fossil fuel.

In the first project of this kind, water collected in a pit stored enough heat during 1979 to satisfy all of the heating demand of a Swedish office building during the winter of 1979-1980. In another experiment, a solar district heating system using a heat pump for nine detached homes produced a 70 percent reduction in total yearly fossil fuel heat requirements. In a larger project, involving 56 detached homes, solar district heating provided 92 percent of the heat and hot water energy consumed.

A development of 2000 Swedish homes will be completely dependent—summer and winter—on solar district heating for all hot water and space heating requirements.

It must be emphasized that in all of the Swedish experiments, district heating systems worked with relatively low temperatures, in some cases, well below average. Also, the buildings heated were well insulated and designed for maximum efficiency. Even with these considerations, the projects are not expected to compete with oil-fired systems based on current oil prices. However, Swedish energy planners say that technical advances, coupled with rising oil prices, will make solar district heating both technically and economically feasible by the mid-1980's.

U.S. Solar District Heating Lags Behind Sweden's

In this country, there are no comparable projects to the Swedish experiments in solar district heating. Three small prototypes of interseasonal thermal storage systems have been built by inventor C. Brent Cluff at the University of Arizona. Other state-of-the-art research is being done by Drs. Theodore Taylor and Robert Williams of Princeton University, and Charles Engleke of Herbert Lehman College of the City University of New York.

One study, for Northhampton, Massachusetts, found that 445 acres of solar ponds could provide all the low temperature space heating and domestic hot water requirements for the town's 35,000 residents.* The total capital cost of completely converting Northampton from fossil fuels to renewables (with conservation) was estimated at $141 million.

*The study of solar ponds for Northampton Massachusetts is part of a larger report, Energy Self-Sufficiency in Northampton, Massachusetts, October 1979, available for $11 from: **National Technical Information Service, 5285 Port Royal Road, Springfield VA 22161.** A limited number of free copies are available to community groups and individuals from: **Dick Holt, DOE, Policy and Planning, 1000 Independence Avenue, SW, Room 4F 051, Mail Stock 7E088, Washington DC 20585.**

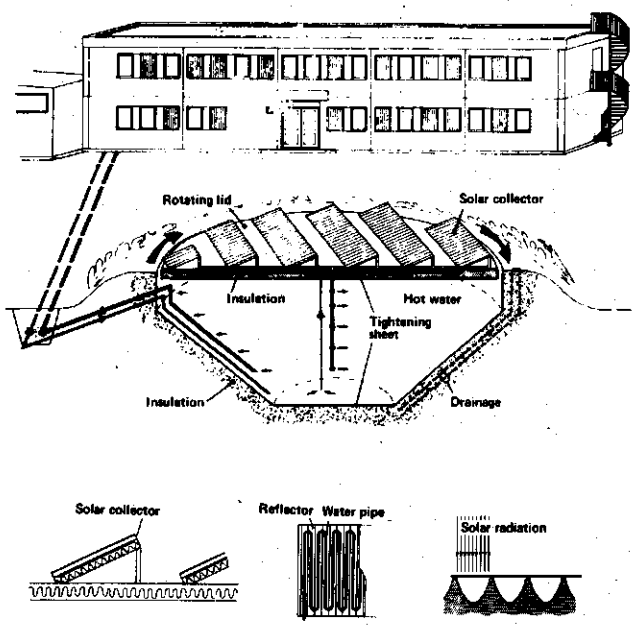


Fig 4. The Studsvik solar heat demonstration plant

A district heating 'solar pit' in the design above satisfied all the heating demand of a Swedish office building during the winter of 1979-80.

Benefits of such a system, however, were estimated at $239 million under the most conservative circumstances. The figure does not include benefits from large numbers of relatively low-skilled jobs created through the 10 to 15 year period required to build such a solar district heating system. Again, the Northampton study emphasized providing heat only at the lowest temperatures required, and to buildings with high energy efficiency.

While the potential for solar district heating has looked good on paper, the practice of district heating in this country to date has largely ignored solar and other low temperature systems.

The most publicized American district heating project is being planned in St. Paul, Minnesota. Under the plan, hot water produced as a byproduct of cogeneration at the Northern States Power Company's High Bridge plant would be piped into the downtown area to heat about 80 percent of the buildings. The coal-fired plant presently provides steam heat for part of the downtown area, but "wastewater" heat from generator cooling is now dumped into the Mississippi River. That heat, under the plan, would be recovered and used to heat the downtown area.

The St. Paul system as currently planned will deliver hot water in the 200°F to 250°F range. This is higher than the newer Scandanavian systems, which are designed for temperatures ranging from 120°F to 200°F. Another difference is that buildings serviced by the St. Paul system will not necessarily have maximum energy efficiency. This approach could cause problems.

"A lot of time and money have gone into St. Paul," says Jack Gleason, an energy consultant who prepared a report on solar district heating for the Solar Energy Research Institute. "Unfortunately, when all the studies are done, the project may not get off the ground. It's very likely not to be cheaper than using natural gas at the current prices."

Gleason urges St. Paul planners to look at maximum energy conservation first, then design the lowest temperature district heating system they can: "It will mean cheaper pipes, less heat loss during transmission, and greater efficiency in power generation."

Gleason notes that some buildings in the system will probably need higher temperatures than a low temperature system could deliver. " But it's cheaper to use heat pumps in those cases than to overdesign the whole system," he said.

Gleason is not optimisitc about the development of low temperature district heating in this country. "Planners at the U.S. Department of Energy are doing almost nothing with low temperature systems," he said. "All the research and funding is going to high temperature, fossil and nuclear fueled systems."

This spring, the federal Housing and Urban Development (HUD) office will provide $1.5 million for 30 planning grants for district heating systems. With an average grant of $50,000, the emphasis will be on smaller systems. Gleason has been helping communities prepare proposals for the HUD program, but said he doubts that many low temperature options, particularly solar systems, will be considered. Funds for design studies will also be available from the U.S. Department of Energy, but Gleason said that all of these will probably go for large, high temperature systems.

Community groups and local officials should not wait for the federal government to discover the advantages of low temperature district heating, Gleason said. "There is a tremendous amount of private research and experimentation that local communities can draw on," Gleason said, "and financing can happen through state, local and private sources."

Gleason also noted that futuristic-sounding solar ponds and interseasonal storage should not discourage community energy organizers from thinking about district heating right now. Many district heating systems can be powered by boilers using a wide variety of energy sources: coal, wood, peat, agricultural waste and urban garbage. Wood-fired district heating, Gleason said, is particularly feasible in small Northeastern cities. "These are near-term design options that are compatible with low-temperature solar district heating that will come 10 or 15 years down the road," Gleason said.

Gleason, who worked this winter for the New England Sustainable Energy Project, is now working as a consultant in Washington, DC. He is willing to provide resources and contact persons for community groups and local officials who want to explore low temperature district heating options. Contact him through ILSR, 1717 18th St, NW, Washington DC, 20009.

Community groups and local officials should not wait for the federal government to discover the advantages of low temperature district heating.

Progress Reports

Coop and Community Newspapers

The *Amherst News* in Amherst, Massachusetts, has recently joined the small club of American weekly or daily newspapers which are not privately owned. For the past several months, the weekly *News* has been run as a worker cooperative. Its eight full-time employees bought equal shares in the company and have an equal say in company management. Although news is handled through a traditional system of reporters and editors, overall editorial policy is decided democratically.

Coop members formed the *News* when they were laid off from the *Amherst Record.* The owner of the *Record,* a conglomerate, changed the paper from a daily to a free weekly "shopper" and moved operations 30 miles away to a sister paper's home office. The company decided that as a free weekly, the *Record* no longer needed a local staff.

The worker-owned *News* was capitalized through shares purchased by the eight coop members. Recently, the newspaper also received a loan from the National Consumer Cooperative Bank. Staff member Robert Ferri said that production expenses total about $10,000 a month, and that the paper has a paid circulation of 1400 is a town with 18,000 permanent residents.

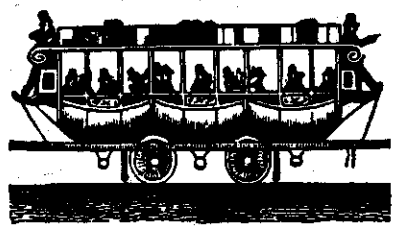
Worker or community owned newspapers are not that uncommon. But most are monthlies or semi-weeklies, run largely by volunteers on shoe-string budgets. There have been few alternative ownership successes involving newspapers with large budgets, paid staff and wide circulation. One exception is worker-owned Wilkes-Barre *Citizens Voice* in Wilkes-Barre, Pennsylvania. The *Citizen Voice,* published daily for over two years, is owned by its staff of 189, each members of four unions on strike against the competing Wilkes-Barre *Times Leader.* At the time the strike was called, the *Citizens Voice* was formed and financed by the unions to pressure the *Times Leader* into a settlement. After two years, no

settlement is in sight, and *Citizens Voice* managing editor John Wyda says his paper will soon decide on whether or not to publish permanently. The two competing dailies now have roughly equal circulation. In addition to union financing, success for the *Citizens Voice* has come from unusually strong reader support (Wilkes-Barre is heavily unionized) and traditional management practices. In fact, the only major difference between the *Citizens Voice* and most other city dailies is that overall policy is decided not by a publisher, but by an eight-member "unity council" with two representatives from each of the four unions which make up the staff. Only staff members vote in council elections. There are no shares sold to readers or community residents.

Another alternative newspaper model —community ownership—has had even less success than worker ownership. One of the only experiments of this kind involving a daily, in Madison, Wisconsin, failed last January after almost two years. The *Madison Press Connection* was run by a board of directors elected by shareholders. Any Madison resident could purchase shares (at $100 each) and get one vote. Throughout its short life, the *Press Connection's* problems were legion. It was woefully undercapitalized and faced stiff competition from two existing dailies. Its democratic structure added other problems. With fewer than several hundred people owning shares, control of the paper was constantly an issue, with various factions competing through long and debilitating meetings. "We were a community-owned newspaper," says George Vukelich, chairman of the *Press Connection* board, "but we constantly argued over the definition of 'community.' "

Another newspaper, a weekly in upstate New York, recently switched to private hands after almost eight years of community ownership. Two editors of the *Newfield News,* tired of low pay and mounting bills, proposed that the community board which owned the paper expand by purchasing three other papers in nearby small towns. The editors felt that consolidating the four papers into one operation was the only road to solvency for the *News.* The community board, however, balked at making the financial and management commitment involved. The editors then raised $20,000 on their own and bought the *News* and the three other papers. "We didn't want to be bosses," says owner-editor Robert Sperling, "but we had no choice."

For more information about the *Amherst News,* contact Robert Ferri, Box 863, Amherst MA 01004, 413/253-9787.



When writing to any of the contacts mentioned in SELF-RELIANCE, please send a self-addressed stamped envelope. It will speed the reply and will save these folks some money.

Small Brewers Make a Splash

The following information is from an article written by Charles Matzen which originally appeared in ***zymurgy, Journal of the American Homebrewers Association, Inc.*** *(Subscriptions: $8/yr. Box 287, Boulder, CO 80306).*

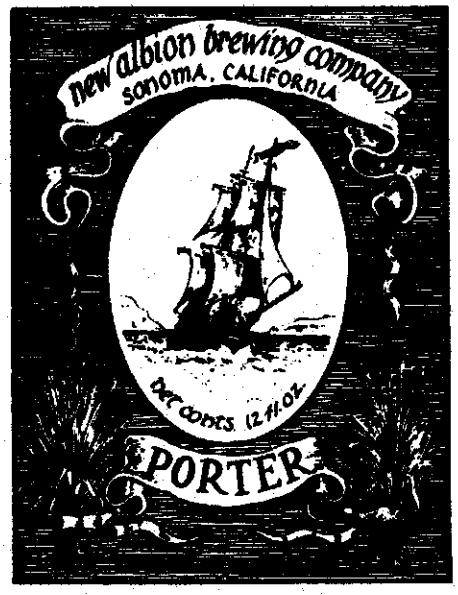
Before Prohibition, there were 1500 breweries in the United States. Today there are about 45 with three of the biggest (Anheuser Busch, Miller and Schlitz) accounting for over 60 percent of the market. Obviously, smaller breweries have found it difficult to survive. It is cheaper to make beer by the millions of barrels than by the hundreds. Miller and Busch spent $64 million each last year on advertising, while Schlitz only spent $41 million. The light—and some would say bland—beers brewed by the large American companies are also cheaper to produce, requiring less costly ingredients and less attention to detail in the brewing process. For whatever reason, the American brewing industry, once the picture of diversity, has long been concentrating and standardizing.

Yet in the face of the trend, "micro" breweries are making a comeback. According to William Shea, executive secretary of the Chicago-based Brewer's Association of America, "All of a sudden I'm getting calls from people all over the country wanting information about starting small, family-type breweries."

There are probably fewer than a dozen of these small brewers now operating in the United States. A survey of five such brewers by the American Homebrewers Association, Inc. found several factors common to each. The companies surveyed included the Boulder Brewing Company, Boulder, Colorado; New Albion Brewery, Sonoma, California; DeBakker Brewing Company, Novato, California; Cartwright Portland Brewery, Portland, Oregon; and Sierra Nevada Beer, Chico, California. Others are in the planning stage in California, Seattle and Albuquerque.

The small breweries are beginning with limited capital (between $50,000 and $100,000) and are building, scrounging or remodeling most of the equipment themselves. The owners are former homebrewers using self-taught techniques. The breweries are run by two to five people, usually brewing once or twice a week (though the other operations in the brewery and the office are a fulltime job). Brewers emphasize the need for "the love of beer and brewing" and that major rewards are in the personal satisfaction of brewing a fine beer. Though marketing plans are important, all say that demand exceeds supply, even though none advertises. All said they intend to remain small, brewing a few hundred to a few thousand barrels a year. The beers sell for between $1 and $2 a bottle. Customers cite "unique taste" and "pride in drinking one's local beer" as reasons for paying the extra price.

Stick Ware of Boulder Brewing Company, reflecting on the miniscule but definite dent micro-brewers have made on



the American beer industry, said, "As human beings we have a legacy of at least 3,000 years of brewing beer. In the last 50 years the legacy of producing good, tasty, healthy brew has been discarded for 'modern' food processing and marketing." The small brewery owners and operators believe that the American public is again ready for quality beers that are naturally brewed and locally produced.

Dumping Fees Increase Recycling

What happens when people have to pay directly to dump their waste? Not only does less waste get dumped, local recycling efforts improve. Lane County, Oregon, is a case in point.

Faced with a glut of garbage, Lane County waste officials reexamined their policy of financing waste landfilling from general tax revenues and considered charging user fees. Under the old system, residents and business could dump their waste at any of several transfer sites for free. About half of the county's residents chose to haul their own, while the rest paid private collectors to do the hauling. County officials surveyed about 85 communities in the western United States and found that only about 30 percent were not charging some kind of direct fee. The system Lane County adopted has special rates for both volume and type of refuse.

Charging direct fees had two major effects. First, the amount of waste dumped at county transfer stations dropped a whopping 9,960 tons over last year's rates. Meanwhile, BRING, the local recycling agency, reported a 42 percent increase in materials processed over last year. Says BRING general manager Ken Sandusky, "The BRINGmobile has gone nuts. We have an increase in materials, and of course, we get more revenue, which allows us to increase our operations."

According to Sandusky, BRING will use most of the recent increase in revenues to finance a collection truck and to push a major glass processing facility to completion.

For more information, contact: **Ken Sandusky, Box 885, Eugene OR, 97401, 503/746-3023.**

Progress Reports

New Models for Integrated Urban Houses

The concept of a home combining state-of-the-art technologies in renewable energy, waste utilization and food production, demonstrated by the well-publicized Integrated Urban House at the Farallones Center in Berkeley, California, has spawned surprisingly few imitators. One of the few opened this fall in Toronto, Canada. Called Ecology House, it features a solar greenhouse, solar hot water systems, greywater recycling, energy efficient appliances, a composting toilet, rock storage, a hydroponic greenhouse, a Trombe wall and wood stove. The house, a converted 1891 Victorian mansion, is expected to cut its heating requirements by 85 percent. Organized by the Pollution Probe Foundation, Ecology House received financial support from more than 75 individuals, foundations and corporations. Eighty people participated in the design and construction, which took more than two years. Pollution Probe has produced seven factsheets on various systems in Ecology House and conducts tours and workshops in the building for the public. For more information, contact: **Ecology House, 12 Madison Avenue, Toronto, Canada, M5R 2S1, 416/967/ 0577.** A similar house is open for tours, workshops and classes in East Lansing. Contact: **Urban Options Energy House, 135 Linden Street, East Lansing, MI 48823, 517/351-3757.** Responsible Urban Neighborhood Technology, a community group in Portland, Oregon, is currently renovating and retrofitting an abandoned house and plans to offer workshops and tours beginning this summer. Contact: **RUNT, 2926 North Williams, Portland OR 97227, 503/ 288-4504.** Plans for similar projects are underway in Mississippi **(Robert Kochtitzky, 4724 Oaklawn Drive, Jackson, MI 39206, 601/366-8467)** and Maine **(Harry Davis, 48A Winter Street, Portland ME 04102, 207/773-6931.)**

Town Ordinances Back Recycling

Wilton, New Hampshire (pop. 2500) is recycling almost all of its waste—and saving money at the same time. Residents bring glass, metal and newspaper to a central storage area, where the material is purchased by local recycling companies. Baling the newspapers and presorting the other materials in the home increases their value considerably. Residents also separate organics, which are composted in an adjoining shed and sold for $25 to $30 a ton. A new incinerator burns the small amount of non-recyclables that remain, while heat from the incineration is used to speed the composting process and warm the recycling building.

Wilton and four nearby towns spent $360,000 of their own for the recycling center—no federal, state or county funds were used. The center costs about $46,500 a year to operate, but the sale of recyclables brings in $40,000. So the net operating costs—$6500 a year—comes to about $2.90 per person each year.

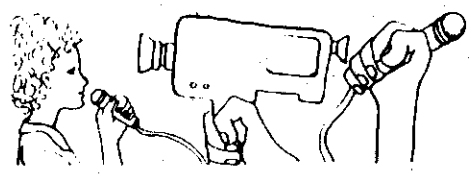
The educational effort is backed by ordinances in all four towns requiring source separation and fines for residents who bring their waste to the center unsorted. Organizers report that participation in the recycling effort is nearly 100 percent. For more information, contact: **Greg Bohoslewicz, c/o Town Selectman, Wilton, NH 02086, 603/654-9451.**

Community TV Flourishes in New Orleans

The New Orleans Video Access Center has survived budget crunches, floods and outdated equipment to become one of the nation's most active community television groups. NOVAC (profiled in *Self-Reliance* #17) produces television shows on local community affairs and trains citizens in television production and the use of video equipment. The group is also leading a fight for public access to cable television, scheduled to begin broadcasting as early as this winter.

NOVAC's most successful project, Survival Information Television (SIT) broadcasts social service information to low-income people through television monitors in welfare office and hospital waiting rooms. Surveys indicate that almost 90 percent of the people in the waiting rooms watch the shows, and that three-fourths of the viewers use the information presented. The New Orleans Women and Employment program reports that 80 percent of their clients say they learned about the program through Survival Information Television.

Recently, NOVAC received a grant to produce a series of three short videotapes on hypertension. The group has also reactivated its video training program, so that community groups can prepare polished videotapes for the future public access channel of New Orleans cable television. NOVAC continues to publish its lively newsletter, *Video Vibes,* which comes with a $10 membership in the group. For more information, contact: **NOVAC, 2010 Magazine Street, New Orleans LA 70130.**



Access Video News/cpf

'Integrated' Waste Collection Recycles 36 Percent of County's Waste

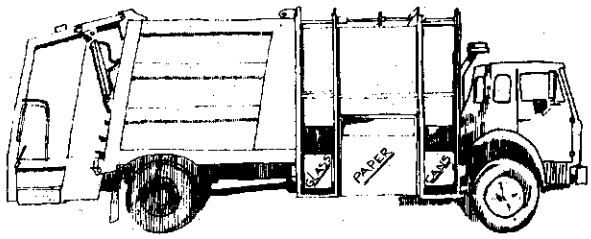
by Trisha Ferrand, Jon Huls and Neil Seldman

Legalized casino gambling has sparked investment, tourism, and urban redevelopment in Atlantic County, New Jersey, and its best known municipality, Atlantic City. Local officials hope this will help revitalize inner-city communities in this once flourishing resort area. The county's population is expected to double to 335,000 by 1990.

Growth also means more waste. The projected two-fold increase in solid waste generated presents another challenge to local planners. There are already problems with landfilling the current 300 tons per day (TPD) of county solid waste. While nearly all existing landfills must be immediately closed or upgraded, the waste stream is expected to double over the next decade.

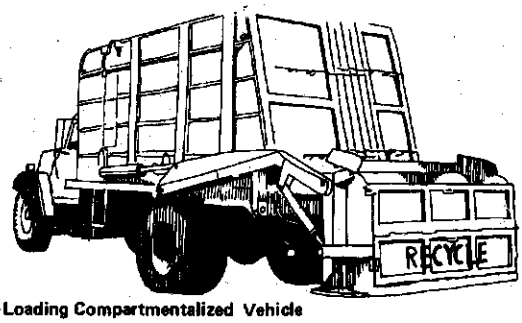
Hydrological studies show the county is poorly suited for land disposal. With its high water table and sandy soils, there are few naturally good landfill sites in the county's future. To protect the potable water supply, derived almost exclusively from ground and surface water, the county will spend more than $8.8 million to upgrade or properly close most landfill sites within the next six years. Establishing new sites after the remaining sites are full—probably by 1990—will be a costly and politically formidable task. It will involve 23 separate municipalities within the county as well as regional agreements with bordering counties. Planners are eager to develop alternatives to landfilling.

Such factors prompted county planners to consider materials recovery and a small-scale, flexible energy recovery facility as the basis for the county's solid waste management plan. "Atlantic County has a real garbage problem," said County Administrator Herb Simmens, "and recycling and appropriately-scaled energy recovery can help us out."



Separated Discards Carrier

Self-Reliance, Inc., the consulting branch of the Institute for Local Self-Reliance, headed an engineering team which developed the conceptual design for this plan. The design has two components: a comprehensive source separation program which would feed sorted refuse into a 100 TPD materials recovery plant, and a 250 TPD modular incinerator. The latter would burn material that could not be recycled and provide marketable steam energy for commercial space heating and cooling.



Rear-Loading Compartmentalized Vehicle

This approach attracted wide interest and support during a week-long series of interviews with more than 60 representatives of state, county and local governments, waste haulers, landfill operators, and other business, community and environmental interests during November, 1979. These recommendations were recently adopted and approved by the State of New Jersey as part of the official county solid waste management plan.*

Collection Modification, Not New Equipment

The source separation program designed by Self-Reliance, Inc. calls for county-wide integrated* curbside collection of recyclables and refuse. Residents would be instructed to separate all refuse into only two categories: mixed recyclables, which would include paper, glass and metals (newsprint may be bundled separately) and combustibles, which would include all other refuse. The program would be developed as part of the regular refuse collection system. No new ordinances would be needed, except to redefine waste categories. Currently, Atlantic City municipal haulers collect on a twice per week basis. County-wide, the various townships collect either by franchise or municipal service once or twice per week. A few county residents must transport their waste on their own to disposal sites.

Mixed recyclables would be collected on a once or twice a month basis in lieu of regular refuse collection. This procedure would have the advantage of maintaining current collec-

(Continued on page 12)

*The 53-page report, *Resource and Energy Conservation through an Integrated Approach to Solid Waste Management*, is available for $4 (the cost of reproduction and mailing) from ILSR, 1717 18th Street, N.W. Washington, D.C. 20009.

*Integrated collection differs from separate collection in that additional vehicles or separate vehicles are not used. Rather, the same vehicles collect refuse and recyclables. This amounts to a modification of collection. Collection options vary from staggering collection (one day for refuse, one day for recyclables), to simultaneous collection of refuse and recyclables, e.g. using a trailer vehicle attached to conventional packer, specialized trucks with compartments for recyclables and refuse, or conventional packers which pick up refuse and bags of recyclables for later processing. There are advantages (lower cost, utilization of present equipment and labor) and disadvantages (product cleanliness). For more information, contact: Secondary Resources Development Consultants, 115 So. Patrick St., Suite 304, Alexandria, VA 22314.

Trisha Ferrand and Jon Huls are waste utilization consultants for Self-Reliance, Inc. Neil Seldman is waste utilization director for ILSR.

Modular Incineration Matches Supply, Demand

(Continued from page 11)

tion schedules and also may use existing equipment. For rural and outlying areas, the county would spot roll-off containers, satellite recycling depots on landfill sites, along with phasing out mixed waste tipping at these sites.

With this system, we estimate that at least 36 percent of the waste stream would be diverted to the materials recovery station.* There, recyclables would be sorted and processed to specifications for marketing as flint and mixed glass cullet, separated and flattened aluminum and steel cans, other miscellaneous ferrous and nonferrous scrap metals, and newsprint, cardboard and high grade papers. By using a combination of mechanized and labor intensive sorting, a common practice outside the U.S., this facility would create about 20 new jobs. Mechanized sorting would include procedures normally used by salvage yards: magnetic separation, conveyors, sorting stations, and roll-offs. The processing/marketing component would be designed to take advantage of the services of existing scrap dealers. This is critical to project success, because the county program should incorporate rather than compete with existing efforts. Markets for all recyclables are evidently strong in or near South Jersey. Overall, the average sale of recyclables to be processed at the materials recovery center is estimated at $60 per ton.

Nearly all remaining refuse would go to a 250 TPD refuse-fired modular incineration facility. This modular system would provide maximum flexibility for seasonal waste fluctuation because it would consist of five separate 50 TPD units. This technology has already proved successful in numerous programs in other cities such as Chicago, Illinois (500 TPD) and Auburn, Main (150 TPD).

This 250 TPD facility would produce low pressure steam averaging 45,000 lbs. per hour on a 24-hour basis. This would not be suitable for most industrial needs, but would be ideal to meet heating and cooling requirements for five new 500 bed hotel/casino complexes planned for the marina area. As costs of fossil fuels continue to rise dramatically in the next ten years, energy recovery from such low quality combustibles as demolition, construction, and agricultural wastes could also become cost effective. Modular incineration, therefore, optimizes long term as well as seasonal flexibility in planning waste management systems. It should also be noted that prior source separation of non-combustible and abrasive recyclables enhances the fuel characteristics of the remaining waste fraction and prolongs processing equipment life.

Tipping fees would not be charged for recyclables delivered to satellite depots, roll-offs, or to the materials recovery station. The modular incinerator facility, however, would charge a tipping fee of at least $6 per ton. This would serve as a financial incentive to haulers to enforce segregation of wastes to maximize the "free tipping" shares of their loads. As an additional incentive, many outlying haulers would save on transportation costs by delivering segregated materials to conventiently located satellite depots, rather than to the incinerators which would be located further away.

Before further planning can take place, the county will have to analyze the waste stream for quantity, composition, seasonality and combustion characteristics. It is important to note that Atlantic City's contribution to the waste stream differs from the rest of the county's in two important aspects: first, as a resort area, there will be significant seasonal variations in the waste quantity and composition generated. This rules out use of large-scale high technology energy recovery systems (from 1000-2000 TPD) because their economies of scale require that they constantly operate at nearly design capacity every day of the year. In particular, large scale plants appear economically sensitive to fluctuations in revenue-producing recoverable materials. Second, casinos, hotels, convention centers, restaurants and office complexes generate waste typical of commercial generator with high volumes of glass, corrugated and organics. Servicing such entities in a source separation program requires design of subsystems which efficiently segregate, aggregate, store and collect recyclable materials. For example, it was found that casinos already segregate glass bottles as part of their inventory system. However, these are later mixed with other waste streams.

*Based on relative amounts of waste composition for recoverable items and 70-90 percent participation rate.

Energy Recovery Leaves Other Options Open

The relative ease of implementation and long term flexibility of the appropriately scaled, compatible materials and energy recovery system will enable county planners to look into other innovative waste utilization strategies which should achieve greater importance for the future. The Atlantic County Department of Energy is conducting a study on alcohol distillation from biomass. Residues from the process can be applied to agricultural lands. Another possibility which will receive some attention is the development of a bottle washing industry to serve New Jersey wineries. In Oakland, California, this kind of program reuses over 20,000 cases of bottles per month and runs at a profit.

No one expects to strike it rich through solid waste reduction and recycling. But county officials certainly consider it a winning proposition to simply cut their losses by substantially reducing waste and pollution, returning some revenues to the system, and creating jobs for the county's citizens.

New Jersey Leads in Recycling

The state's recent approval of the County's Solid Waste Plan, which incorporated this approach to solid waste management, is a positive sign. Overall New Jersey's resource recovery program is one of the most progressive in the country. It emphasizes both economic development and energy conservation in connection with energy recovery. The same approach has been taken by the State Advisory Committee on Recycling, which recently released a comprehensive report on the status of recycling in New Jersey and made recommendations for future development. In conjunction with this effort, the State Coastal Zone Commission requires that casinos and any new commercial development in coastal zones participate in any county source separation program as a condition for obtaining permits. Finally, a $50 million resource recovery bond was passed in November 1980, making favorable financing available to New Jersey counties for their resource recovery projects.

Atlantic County's planners appear to have timed their work well. Using state and federal sources of solid waste management funds and private capital, they may well piece together the first major recycling and small energy recovery system to serve an urban resort area.

Off the Shelf

Harry C. Boyte
The Backyard Revolution
Understand the New Citizen Movement
Temple University Press
1980 257 pages $14.95

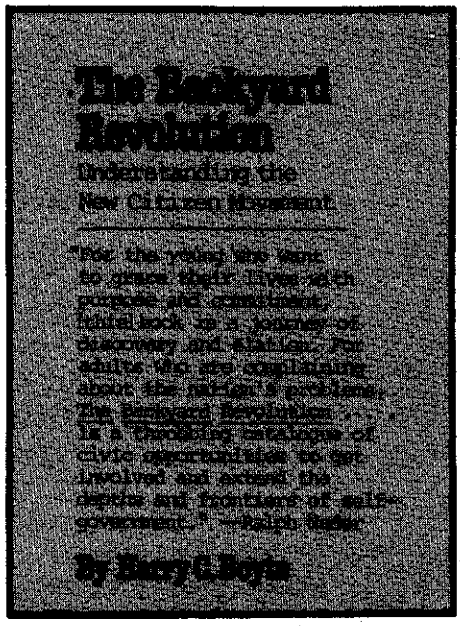
Books about "citizen action" usually take one of two routes. Either they offer a shopping list of activities with little or no attempt to explain how they all add up, or they focus on one or two kinds of citizen action, without explaining how this fits into the larger picture. *The Backyard Revolution: Understanding the New Citizen Movement,* by Harry Boyte, an experienced writer on citizen organizing, is a worthy effort because Boyte attempts to analyze as well as describe. It may be that few people know what the last decade of citizen action really means, but something definitely is happening, and we had better try to understand it.

In the course of his analysis, Boyte covers the now familiar list of citizen action: groups like Fair Share, ACORN and National People's Action, campaigns against redlining, nuclear power and highways, issues like tenants rights, health and safety and solar energy, as well as the cooperatives, community development corporations and credit unions.

The title and subtitle of the book use several key words which quickly tell the reader what Boyte thinks about these various activities. To Boyte, citizen action not only adds up to a movement, it is a revolution. But according to Boyte, citizen action is a revolution taking place in the backyard, indicating that the middle-class is its prime mover. Boyte pays little attention to citizen action involving welfare, jobs or fair housing, the traditional poor peoples' issues.

Unfortunately, Boyte's analysis rests on several assumptions which sometimes put him on shaky ground. First, Boyte argues that the strength of citizen action is in its diversity. It may be that the variety of citizen action groups across the country does add up to some kind of movement. But comparisons should be made carefully. True, tenants pushing for rent control and farmers driving tractors to Washington are both grassroots fights for more power. But it is hard to see what else these two groups have in common, on what issues they would fight together, or how they would settle conflicting interests. Similarly, Boyte says that a citizen group could be against forced busing and make alliances with black homeowners at the same time. But it is doubtful that such a group really exists, and for good reason. In fact, the most successful movements, such as the labor, civil rights and anti-war movements, were organized through a variety of activities, but with highly unified interests and goals. Boyte does not demonstrate what similar unity exists in the citizen movement.

Another problem with celebrating the diversity of citizen action is the substitution of variety for power. Thus, if one can point to credit unions, community newspapers and urban gardens, surely something important must be going on. True, these activities are worthy alternatives, and so are important. But credit unions will not overthrow the country's banking system, community newspapers are no threat to the three television networks, and urban gardens do not challenge the cartel on grain. If there is a citizen movement to change these institutions, Boyte does not discuss it.



Most successful movements, such as the labor, civil rights and anti-war movements, were organized with unified interests and goals. Boyte does not demonstrate what similar unity exists in the citizen movement.

Finally, attempts to buttress the case for diversity tend to produce evidence which is marginal or irrelevant. In a chapter on building a new culture, for example, Boyte cites television shows like *60 Minutes* and films by people like Alan Alda and Robert Redford. Whatever progressive values are espoused here, it can hardly be said that this constitutes a new culture.

Boyte's second assumption about citizen action is that the movement is ideologically neither left nor right. True, citizen action often differs from what is commonly understood as left or right politics, and in some case has elements of both. But in attempting to make the citizen movement unique, Boyte seriously misrepresents the left and right.

Boyte describes the new citizens movement as grassroots and community based, with traditional values like local control which are both anti-big government and anti-big business. The left, according to Boyte, is no such thing. "In the mainstream left, to be free means to be uprooted, detached for particularity, the new man or woman of socialist mythology," Boyte writes. Later, he says, "Briefly stated, the left's program to change society is like urban renewal: if a social relation seems blighted or ugly, level it and start over." The left agenda has meant many things, but "leveling social relations" and "socialist mythology" have never been its main thrust. Almost any left issue, from labor and tenants rights to racial equality, has featured grassroots organizing, coalition building and local strategies. The new citizens movement is certainly different from left organizing in the past, but more in an evolutionary than fundamental way.

Boyte's misrepresentation of the right

(Continued on page 15)

Off the Shelf

Witold Rybczynski
Paper Heroes: A Review of Appropriate Technology
Doubleday Anchor Paperback
1980 167 pages $4.95

Franklin A. Long and Alexandra Oleson, eds.
Appropriate Technology and Social Values
Ballinger Publishing Company
1980 205 Pages $22.50

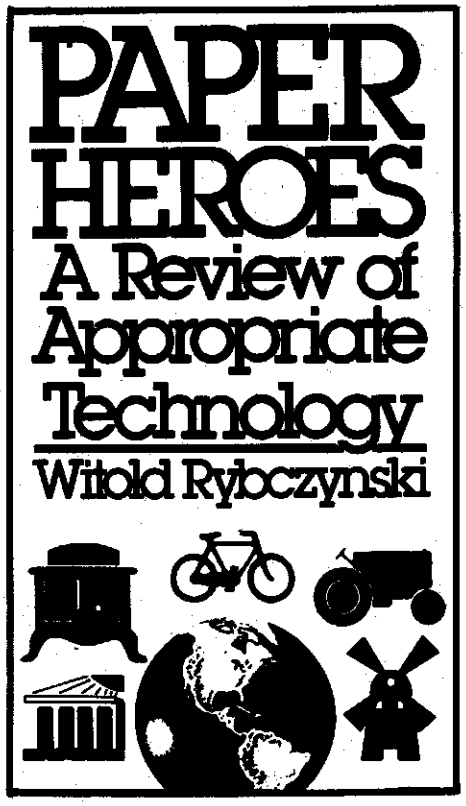
What is appropriate technology? The question has been asked so often it has become a joke. Few of us could bear more attempts to define appropriate technology, yet these two books deserve a look, even with their many faults.

Paper Heroes, subtitled "A Review of Appropriate Technology" is more of a put-down than a review, even though author Witold Rybczynski describes himself as an AT practitioner. According to Rybczynski the AT field is filled with phonies and hucksters. AT literature is often superficial, and largely written to make a fast buck. Even AT guru E.F. Schumacher does not escape Rybczynski's critical eye unharmed. Rybczynski says Schumacher's AT bible, *Small is Beautiful,* is a mishmash of contradictions and that Schumacher himself is on "the wrong side" in the technology debate (an insight Rybczynski ironically says he gained in "a kind of satori"—a Zen Buddhist movement of enlightenment). Along the way, Rybczynski trashes principles like nonviolence, self-reliance and environmental concern, describing them as unrealistc or irrelevant to the real tasks at hand.

Much boosterism has been written about appropriate technology, and the field could use a thoughtful, probing critique. Unfortunately, for the most part, *Paper Heroes* does not fill the need.

A review in this newsletter should probably begin with Rybczynski's discussion of self-reliance. He confuses the term with self-sufficiency and argues that because self-sufficiency is impossible, self-reliance is some sort of hoax. But those using the term self-reliance rarely mean self-sufficiency (as any quick reading of the literature would show), so Rybczynski is knocking down straws. Meanwhile, he ignores the useful debate on the limits of producing and consuming locally. Similarly, when Rybczynski argues that "all technology is violent," he somehow misses the distinction between single violent acts and harm to human and ecological systems.

Inbetween these misses, however, Rybczynski does score some hits. Noting that appropriate technology supposedly stresses local action, Rybczynski details a worldwide AT movement largely designed, financed and supported by Western nations for the "benefit" of Third World nations. Rybczynski also makes useful distinctions among the many who identify themselves with AT. Those AT practitioners organizing neighborhood cooperatives, he correctly notes, are quite different from AT practitioners getting back to the land with a do-it-yourself philosophy.



According to Rybczynski, the AT field is filled with phonies and hucksters. AT literature is often superficial, and largely written to make a fast buck.

Probably Rybczynski's most important point is that social reform does not necessarily follow from technological innovations. "Nothing in the Indian experience supports this view . . ." he says. "Landlordism, powerful rural elites, conservative banks and rapacious moneylenders all conspire to maintain the poverty of the landless peasants. These social and political problems require social and political solutions; it is both presumptuous and naive to believe that technology alone will have any effect in a situation such as this."

Appropriate Technology and Social Values: A Critical Appraisal is a collection of ten essays, seven of which are written by college professors. Some of the essays are dry and academic to the point of being unreadable by the average AT enthusiast. Others offer an interesting point or two to those who struggle through them. Langon Winner's piece, however, on AT as a social movement, is well worth reading. Winner covers social critiques of technology going back to Thomas Carlyle and the onset of the industrial revolution. But his best observations are on contradictions in "new age" thinking on technology. One point explains much about the confusion over appropriate technology and why it has not and is likely never to become a "movement." Says Winner: "A number of observers have tried to argue that 'appropriate' or 'alternative' or 'soft' technology is a uniform movement with a logically coherent set of characteristics. More than that, of course, many seem to believe that this set of characteristics constitutes an univocal ideal, a picture of a world appreciably better than the one we now inhabit . . . . Nothing in Western philosophy or, for that matter, nothing in human experience indicates to us that we can arrange the good and the bad in simple, noncontradictory lists . . . the selection of concepts upon which such a vision of good technology rests is fraught with incompatibles. It is not obvious, for example, that decentralized production is necessarily environmentally sound; that labor-intensive technologies provide 'work undertaken primarily for satisfaction;' that small-scale communities encourage social diversity."

—David Macgregor

*** Boyte,** from page 13

is one of omission. Whenever he discusses the right, he uses terms like "lavishly funded," "front groups" and "corporate boards." One gets the impression there are no people, only organizations, who are against the Equal Rights Amendment, affirmative action and unions. Yet, millions of citizens have given time, money and their votes in support of these positions. Boyte barely mentions organizing against abortion and forced busing, though these issues surely have produced significant citizen movements. And Boyte misses entirely what is probably the most underrated citizen movement of them all— the Sagebrush Rebellion to bring federally-owned Western land under state and local control. Even Reagan, after his election, described himself as a "Sagebrush Rebel."

Perhaps Boyte believes that citizen action on forced busing, abortion and local control of land is fundamentally different from the citizen action he chooses to include in the movement. But this would be a hard case to make, and Boyte does not attempt to do so. If not fundamentally different, then essentially right-wing citizen action obscures Boyte's thesis that there is a central ideology to the new citizen movement.

A third major assumption by Boyte is that there is widespread support among Americans for progressive issues, which forms the basis for the new citizen movement. Some of the evidence Boyte cites, no doubt to his embarrassment, has been quickly and decisively outdated in the November election.

It would be interesting to analyze why Americans consistently support generally progressive positions in opinion polls while continuing to support corporate agendas in the voting booth. In fact, citizen action groups have a surprisingly poor record when they organize around the ballot box, and one has to wonder if it is always a case of being outspent by the opposition.

All of this is not to say that *The Backyard Revolution* is a poor book. Boyte's arguments are only debatable, not incorrect. And he presents a considerable amount of information that will help citizen activists sort out how their work fits into the larger political arena.

—David Macgregor

Notes

Providing energy conservation and solar systems for rental housing can be difficult. Neither the tenant nor the property owner has much incentive to use energy efficiently. A new Solar Energy Research Institute report, the definitive study to date on the subject of rental housing and energy, is not encouraging. Authors Alice and Jonathan Raab say that the wide variety of rental housing makes the problem more complicated, and that most energy programs do not affect the basic investment decisions made by tenants and property owners. The report describes energy use in rental housing, how tenants and property owners make investment decisions in energy, and various federal, state and local incentive programs. Also included is a bibliography and a list of ordinances cited in the text. *Solar Energy, Conservation and Rental Housing (SERI/RR-744-901)* will be available from the Government Printing Office in late winter or early spring.

Here are a few statistics to cite the next time someone says recycling doesn't work because people won't take the time to do it. In a statewide poll of California residents, 97 percent favored recycling as a strategy to reduce solid waste, while over 60 percent had already had some experience with recycling. High "acceptable" rankings were given to such solid waste solutions as reuse of containers, local recycling centers, removal of recyclables from household garbage, and recovery of valuable resources from processed garbage. Details of the poll are described in the October 1980 issue of *Solid Waste Management News*, published by the **California Solid Waste Management Board, 1020 Ninth Street, Suite 300, Sacramento, CA 95814.**

As garbage in landfills decomposes, significant amounts of methane gas sometimes form beneath the surface. This gas is now tapped in eight landfill biogas projects, producing 1.8 trillion btus annually. *Recovering Gas from Landfills: Resource Potentials and Institutional Barriers* presents information on costs, zoning restrictions, price regulations and municipal bidding and contracting procedures. Copies of the report are $5 from: **American Gas Association, 1515 Wilson Boulevard, Arlington VA 22209, 703/841-8400.**

Many community groups offer housing technical assistance or advocacy services for tenants, but few are doing housing delivery—acquiring property, rehabilitating it and offering homes for sale. Even fewer groups provide housing that poor people can afford, and for obvious reasons. Some of the groups that do deliver housing to poor people are profiled in a 295-page report *People Who Care: Making Housing Work for the Poor.* Author Prentice Bowsher was a staff member for three years at Jubilee Housing Inc. in Washington, D.C. one of the country's most successful low income housing groups. Bowsher's report profiled 13 groups, describing how they are organized, how they financed their ventures, what has worked and what hasn't. Several of the findings run counter to popular notions of community-based self-help housing programs. Few groups used the much publicized techniques of sweat equity and cooperative ownership, for example, and those that did had mixed results. Also, many groups encountered mixed experiences with community workers, and used them sparingly as a result. Copies of the complete report are $5 from: **Prentice Bowsher Associates, 1522 Connecticut Avenue NW, Washington, D.C. 20036.**

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The Institute for Local Self-Reliance
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