

FRIENDS OF THE EARTH'S

chain reaction

- A SOLAR SOLUTION TO UNEMPLOYMENT?

- THE POLITICS OF ALTERNATIVE ENERGY

- food coops
- non-violent protest
- whither foe?



Cover by Michael Vale

vol 3 no 2 1977

\$1

EDITORIAL

chain reaction

vol 3 no 2 1977

Since the Federal Government has decided to export uranium, leaving no further time for debate, a confrontation between governments, environmentalists and unions is inevitable. In recent demonstrations in Brisbane, Sydney and Melbourne protestors have tried physically to stop uranium from leaving the country. In Sydney the protestors tried to sit down in front of the trucks carrying yellowcake to the docks for export, but were dragged off the road in an atmosphere of great violence. One girl was taken to hospital with serious bruising and many people were beaten by police armed with batons. This is only one example of the violence that has erupted, and it is likely that the police reaction to protests will become more severe each time there is a confrontation.

In this issue of CR we print an article on the occupation of a reactor site at Seabrook, New Hampshire. Demonstrators at Seabrook were carefully trained in techniques of non-violent protest, inspired by the teachings of the Quakers. The advantage of non-violent methods was that attention remained focussed on the reason for the protest: the residents' opposition to building the reactor.

There is danger that unless we can borrow from the tactics learned at Seabrook, future protests in Australia will be seen solely as polarised confrontations between the police and demonstrators. This will give the Fraser Government the excuse it needs to use "law and order" as an election issue, while diverting attention from the real questions: Do we want to export uranium? Should the world rely on nuclear power?

The nuclear debate has raised the question of the public's right to participate in making decisions on matters of such national and international importance as uranium mining. The Government's position is that, as the democratically elected government, it alone is responsible for making decisions; even holding a referendum would usurp its power.

The Government, however, does not have a mandate to mine uranium. Uranium mining was not an issue in the last elections. In the absence of the thorough debate recommended by the Fox Report the Government can

expect to meet opposition to its unilateral decision. The public is quite justifiably worried about an issue which affects everyone's future. The decision as to whether to mine uranium is just the first in a series of decisions about nuclear power that will have to be made. There will be pressure to build nuclear reactors in Australia (tentative plans have already been made). Thus our lifestyles may be affected directly by nuclear power. Should we leave such decisions completely in the hands of the Government?

Another area where there is a call for more direct participation in decision-making is in the workplace. In taking up issues which go far beyond the traditional economic bounds of union activity, many working people are now demanding a say in choosing what they produce and the means of production they use. Such industrial democracy is a natural extension of the fledgling democracy we have already in our parliaments through universal suffrage. It also has important consequences for the environmental movement.

As argued in the "Politics of Alternative Energy" trilogy in this CR, solar energy is very likely to be coopted into the service of the existing economic and political system — to perpetuate all its inequalities, and production of such environmental disasters as aluminium drink cans (see p. 22) by workers who gain little or no satisfaction from their work. But this cooption could be avoided if we combine right from the outset the aim of technological change with social and political aims such as industrial democracy and meaningful work for all, the rebuy pressing for more socially beneficial and environmentally benign production. We hope that the meetings between environmentalists and unionists to be held in the wake of the Australian tour of Richard Grossman, of the US group Environmentalists for Full Employment, will broaden further the platform for common action by these two groups, who have much to learn from each other and everything to gain by working together.



"Men go on 'saving labor' till thousands are without work and thrown on the open streets to die of starvation.... Today machinery merely helps a few to ride on the backs of millions."

M. K. Gandhi, 1924

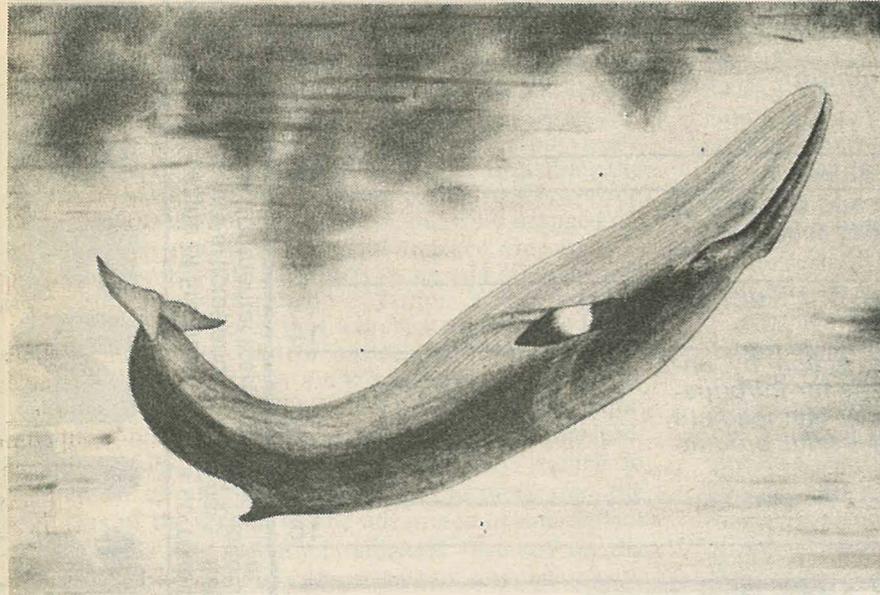
Earth News	2
<i>including round-up of international FOE news.</i>	
Jobs and Energy	
A Solar Solution to Unemployment	6
<i>Richard Grossman and Gail Daneker, of the US group Environmentalists for Full Employment, argue that energy conservation measures and use of renewable energy technology could solve the unemployment crisis in the US.</i>	
Chain Reaction Interview	12
<i>with Richard Grossman, Coordinator of Environmentalists for Full Employment.</i>	
Energy and Employment in Australia	13
<i>The jobs and energy situation here and a review of Richard Grossman's recent Australian tour.</i>	
Workers and Greenies: A Coalition for Technological Change and Meaningful Work?	14
<i>John Andrews calls for combined action by environmentalists and unionists to press for introduction of alternative technology in a way that leads to more meaningful work and socially-useful production.</i>	
Melbourne	16
<i>a poem by Tony de Clifford.</i>	
The Politics of Alternative Energy	
1. Is Alternative Technology Enough?	17
<i>Brian Martin reviews Amory Lovins' influential paper Energy Strategy: The Road not Taken?, and argues that Lovins has ignored the politics of alternative technology. Amory's reply is included at the end.</i>	
2. A Queanbeyan Soft Drink Factory	22
<i>"Solar energy used to produce canned coke at Queanbeyan": A great leap forward in deployment of solar energy? Or should we even be marketing soft drink in cans?</i>	
3. What Sort of Society is Possible?	24
<i>How we can move towards a society based on soft energy technologies and guaranteeing greater social justice and participation in decision-making.</i>	
The Clamshell Alliance	26
<i>A non-violent occupation of a US reactor site.</i>	
"There's no future in FOE"	31
<i>by Peter Hayes; the first of a new series critically probing FOE philosophy and strategy.</i>	
Food Coops	34
<i>Barbara Hutton and Max Smart describe how to set up a food coop, and the experiences of some already in operation.</i>	
Bunyip	39
<i>A short story by Richard Litke.</i>	
Book Review	40

Chain Reaction is the quarterly magazine of Friends of the Earth Australia, publishing feature articles and news on national and international environmental issues.

• correspondence
Chain Reaction, 51 Nicholson St., Carlton, Vic. 3053. Tel. (03) 347 6630.

This issue was produced by Michael Russo, Andrew Herington, Barbara Hutton, John Andrews, John Hallam, David Carter, Mark Carter, Graham Barron, with greatly appreciated contributions from Brian Martin, Amory Lovins, Richard Grossman, Gail Daneker, Mick Waters, Paul Marshall, Alastair Machin, Rosy Carter, Peter Hayes, Richard Litke, Tony de Clifford, Harvey Wasserman, Max Smart, and many others.

CONTENTS



The Albany Whalers

Cheyne Beach, near Albany in Western Australia, is the last outpost of the whaling industry which used to flourish in Australia. Albany is one of the few places in the world where whales used to come close enough in to the land for people to see them from the shore. However, most tourists come to see the whales being stripped of blubber and hacked up on the flensing floor of the Cheynes Beach Whaling Company.

In August, protestors from Greenpeace International, Friends of the Earth and the Whale and Dolphin Coalition, staged a protest at Cheynes Beach. The protestors followed the whaling vessels out to sea in 14-foot rubber dinghies (zodiacs), trying to get between the ships and the whales. (The idea sounds suicidal, but has worked before. In 1975 Greenpeace used zodiacs to get in the way of the Russian whaling fleet, which was taking sperm whales right up to the 12-mile limit off the coast of California. The Russians, in annoyance, fired an ex-

plosive harpoon over the dinghy. There was a great outcry about this and Russian whalers have not come within 700 miles of the US coast since then.)

The Cheynes Beach Whaling Co. reacted strongly against the protest, and was backed up by Sir Charles Court, who said: "It ill becomes a group like the Greenpeace people to come here trying to make trouble and to attack a company which has done the decent thing all along the line."

The company sees itself as "harvesting" the whales. Mr Saleeba, their spokesperson, put it this way: "In one season of 180 days we sighted about 10 000 sperms and we shot 624. No farmer would consider this a dangerous culling of his stock. Besides this, the industry contributes between \$2 and \$3 million to Albany's economy."

There is no comparison between hunting whales and "culling stock", although the whaling industry often refers to it this way. Domestic

animals (such as sheep and cattle) reach maturity when they are only a year or two old and bear offspring every year after that. The great whales are much more similar to human beings in their breeding habits: They are about 13 years old when they reach sexual maturity, but do not reach social maturity till they are about 25 years old, and do not bear young every year. If more than a few per cent of a herd of whales are killed each year, the herd starts to decline: they cannot reproduce fast enough to make up the numbers.

For example, take the grey whale: it is now protected and the numbers have built up to an estimated 11 000. But although it's protected, Eskimos still hunt the whale and a few individuals are taken each year for scientific research — altogether about 200 are killed annually. The whale population has remained stable for several years. The probable reason is that it cannot breed fast enough to build up its numbers any further: only about 200 more whales are born each year than die of natural causes.

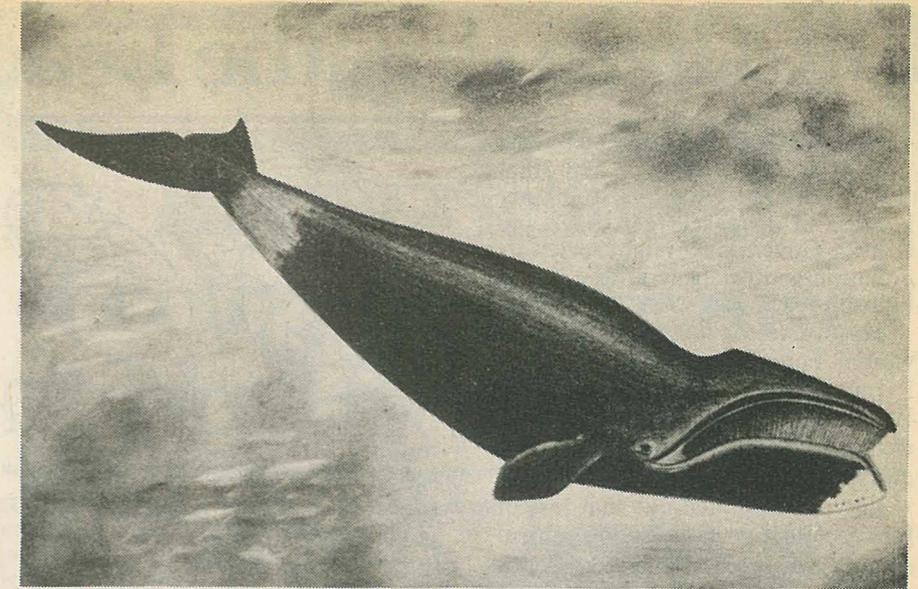
The whalers presume that so long as a few whales of breeding age are left, the stocks will eventually recover when whaling becomes uneconomical. If whales were domestic animals it might be possible to breed from a single pair, but it has not happened among whales. The grey whale is the only species that has managed to recover in large numbers after being declared a protected species. Other whales have not recovered. Why not?

It may be because they are still being unofficially hunted, but could also have something to do with the psychological effect of being hunted almost to the point of extinction. Human races have also died out, killed by despair, when there were still individuals who could theoretically have borne children. Female whales will stay with their

calves and be killed rather than abandon them, and males will do the same with females of their herd.

How does hunting affect the whales emotionally? How does it affect their social organisation? The whaling company isn't interested in such questions and sees whaling purely as an economic activity. The company employs 90 men and 30 more are employed in related work. It claims that, including their children, 1000 people are directly dependent on the whaling industry (they must have big families in Albany).

Albany is probably more dependent on the tourists that pass through to see the whaling. About 70 000 people visit Cheynes Beach every year, apparently undeterred by the stench of rotting whales (whales go off very quickly because their body warmth can't escape the blubber covering). They go in droves to the flensing floor, which is awash with blood as the whales are cut up, and buy whales' teeth for \$8 each to take home as souvenirs of the trip.



In America, where whaling has been banned within 200 miles of the shore, people now come down to the coast to watch the migrations of the grey whale, and more is earned from tourism than ever was from whaling. The Australian Labor Party platform would also make Australian

coastal waters a haven for whales and Cheynes Beach would be a perfect place for a whale reserve.

Perhaps one day, people will come to see *live* whales at Cheynes Beach, instead of coming to watch the butchering and departing with a tooth as a trophy.

Lethal Disease from Chain Saws

On July 28, a Japanese district court awarded 12 former national forest workers \$443 000 in disability compensation, as a result of their contracting a surprisingly common but little publicised circulatory ailment, known as "vibration disease".

In the forest workers' case, the disease was caused by the continuous use of chain saws in felling trees.

By holding the Japanese Government responsible for cases of vibration disease among the lumberjacks it employs, the court has opened a vast new territory for future litigation. Some 4100 Japanese lumberjacks are now officially designated victims of the disease. Among chain-saw-using workers with nine years or more experience, 80% suffer from it to varying degrees.

Most victims experience temporary but recurring paralysis of their limbs, caused by contraction of the blood vessels, while over 20% suffer more serious symptoms. "The brain cells shrink. Vision narrows,



insomnia and fainting recur and loss of consciousness follows any slight change in temperature," says Dr Masanori Goto, a specialist in vibration disease. For some patients death comes abruptly: "because the brain dies".

In the early stages, patients can be treated with medicine that stimulates circulation, but for the most advanced cases there is no cure. "There are organic changes in the brain and heart," says Dr Goto. "There's no

perfect treatment, only temporary relief." Research is under way into the disease in such countries as the Soviet Union, Canada, Britain and Denmark.

The only solution appears to be to take the chain saws out of the hands of the lumberjacks. Japanese manufacturers have already begun to experiment with remote-controlled chain saws driven by rotary motors that cushion the deadly vibrations.

However, technological breakthroughs in the lumber industry will not have any impact on the rising incidence of the disease in other occupations. "In other areas — construction work, factories where vibrating tools are being used more and more — the disease will increase sharply in the future unless new control measures are taken," says Dr Goto.

But, even for the lumberjacks, financial compensation and the promise of future improvements in their working conditions are hardly cause for rejoicing. Shigemi Tanabe, one of the twelve, who is to receive \$42 000, says: "When I cry in pain, I feel my life is shrinking. It's not a matter of money. My health is gone and it will never come back."

Let Them Breathe Lead

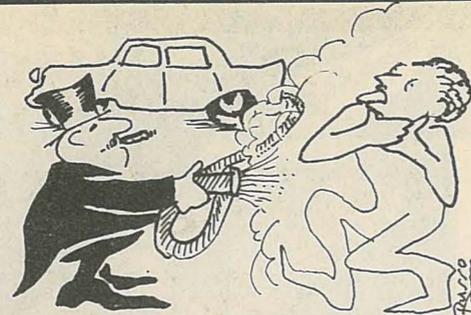
Last month Federal Minister for Transport, Mr Nixon, said that motor vehicles' emission standards had led to increased fuel usage and that the Government might review its pollution-control programme in the light of the energy crisis.

This led to the Australian Conservation Foundation writing to the Prime Minister and all State Premiers calling for a full Environmental Study and a public inquiry before any action is taken.

The ACF pointed out that loss of fuel economy when pollution control devices are fitted, only occurs with cars weighing over 3000 lb, and that most Australian cars are under this limit or very close to it. The original FJ Holden weighed only 2200 lb and returned 30 mpg. Such is progress.

Furthermore, the ACF submitted that at present most of the decisions affecting the automotive industry appear to be based on recommendations which are produced by committees dominated by industry representatives.

Despite this, the Federal Government has announced that the implementation of the second stage of its much touted "design rule 27A" will be delayed a year to 1980 and possibly later. This gives the



manufacturers some "breathing space" but means that breathing space in congested Australian cities is going to be hard to find.

In a separate move the Royal Automobile Club of Victoria (RACV) has called for the reversal of a Victorian Government decision to reduce the legal limit for lead in petrol. The RACV's chief engineer, R.H. Bartlett, said, "the results of such a programme would be horrific to motor manufacturers and users". The main claim made by the RACV was that removing the lead from petrol would boost fuel consumption and waste energy (a convenient catch cry these days).

The fact is that lead only serves to ease fuel economy in today's over-powered cars using high-compression engines. These engines are prone to engine 'knock', which

Desert Creep

world-wide, is now over 900 million square kilometres. This means approximately 40% of the world's arable land has been lost to desert.

Although the precise causes of 'desert-creep' are complex and insufficiently understood, the common factor in the pattern is humanity.

Lucas Initiative

occurred; the shop stewards are currently organising a series of 'teach-ins' on the Alternative Corporate Plan for Lucas Workers, similar to the one held in Burnley last year. The first was held on

can be remedied by adding tetraethyl lead. This lead is mostly emitted in the exhaust. (Nearly 40% of the world's lead production is now used as a fuel additive).

Steps to attack the root causes of air pollution are, of course, much harder, and rely on a government with the foresight and political will to implement genuine transport alternatives and to restructure the city to reduce its dependence on the car.

The lead itself is a highly dangerous air pollutant which acts as an accumulative poison. Chronic lead poisoning leads to anaemia, brain damage and paralysis and has been observed in people in Japan, living close to freeways. Australian studies have found abnormal levels of lead in school children from inner suburbs and a detailed study of country highways in Queensland showed heavy lead deposits in wheat and grass growing many yards from the roadside.

Despite the present restrictions, over 1200 tonnes of lead are emitted by cars in the Melbourne area *alone* each year. This is an increase of nearly 40% since 1972, primarily due to unrestricted growth in the use of cars. Clearly there are two necessary steps to restricting lead and other car induced pollution: restrictions on pollution levels from individual cars and a restriction on the number of cars in use.

Overgrazing and trampling, slash and burn agriculture and firewood cutting, industrialisation and construction, mechanisation and excessive ploughing, land-tenure systems, water rights, feeding habits, kinship patterns, population growth and the settling of nomads, all play a part in the complex interaction between development and desertification.

September 12th in Birmingham and was attended by some 200 people.

The Transport and General Workers Union (TGWU), the largest in the UK, has recently produced a report on 'Military Spending, Defence Cuts and Alternative Employment' which suggests other workers should follow the Lucas example, and calls on the Government to support product-diversification campaigns financially.

FOE Britain insulates homes, creates jobs

A pilot project started by a FOE group in Durham, England, to insulate pensioners' homes, has proved a runaway success, and has also demonstrated that the needs of the economy and the environment can go hand in hand.

The project, first started in February 1967, has since resulted in the insulation of the homes of 4000 people and has created 15 jobs locally while helping to stimulate 400 insulation-related jobs around the country.

David Green of FOE Durham has stated that 10000 jobs could be created if the Government invested \$200 million in insulation projects.

(*Not Man Apart*, Vol. 17, No. 15, 1977)

Sweden still Nuclear

In spite of the victory of the anti-nuclear centre party at the last elections, there isn't a completely open road for the termination of Sweden's nuclear power programme, as other parties within the ruling coalition are either pro-nuclear (the conservatives), or wavering (the liberals).

The Swedish anti-nuclear movement is trying to support the centre party, and has a close working relationship with the Energy Minister, Mr. Olof Johansson.

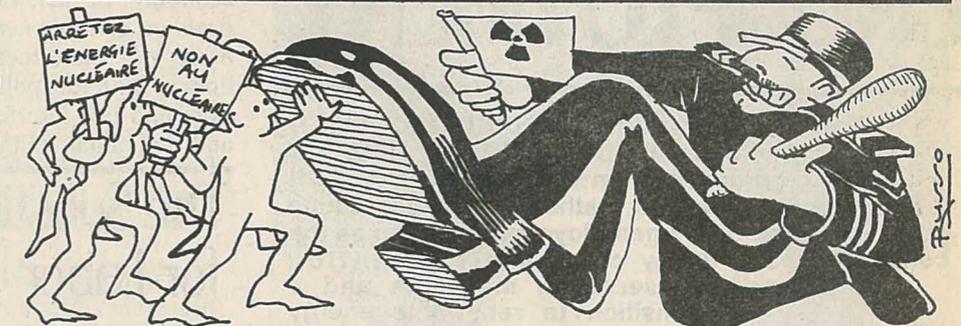
Six reactors are now in operation, and four more under construction. Three more are stalled by a new law which forbids construction until waste problems have been solved.

A three-nation march was planned for September 10th on the station under construction at Barseback, only 20 km from Copenhagen, in the centre of the most densely populated part of Scandinavia. The station has become a symbol of resistance for the nordic anti-nuclear movement. (Letter from Sweden, *Critical Mass*, Aug. 1977).



International FOE

Battle-Scarred Ecologists of France Not Despondent



After their battles of the summer — one dead at Creys Malville, one right arm blown off, scores in hospital and dozens in prison — the Paris ecologists are sadder, wiser, yet more optimistic than ever.

"Creys Malville showed us how blindly stupid the authorities can be," the chief spokesperson for Les Amis de la Terre, M. Brice Lalonde, said. "It has also shown them that five months after the municipal elections we cannot, after all, be dismissed as a passing fashion".

Many of the 50 000 people who turned up at the fast-breeder nuclear power station at Creys Malville left with a feeling that they had been disorganised, compared to the ruthless paramilitary reception the Prefect laid on. "We need organisation, but can't afford to confuse it with institutions as the political parties do," said M. Lalonde.

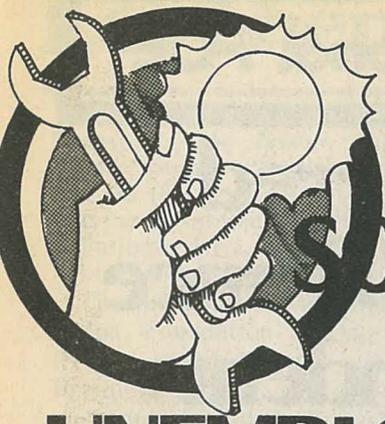
No spectacular victory has yet been won in France, like the three-year German moratorium on the building of nuclear power stations or the American moratorium on reprocessing. "That is because we are behind both those countries in our system of law and politics. Without a genuinely independent judiciary we cannot win such battles here," said M. Herve, another Les Amis spokesperson.

But a breakthrough could come in the French general election, now only six months away. An opinion poll earlier this month led ecologists to conclude that support for their vision of scaled-down and decentralised growth without nuclear energy is growing from roughly 10% during the municipal elections last March to nearly 30% today. They believe this is certain to increase before the general election.

In the municipal elections they hoped to hold the balance between left and right, and succeeded in some towns. "Now it's got much bigger than that," M. Herve said.

Both men were particularly excited by the recent stand taken by M. Edmond Maire, leader of the powerful Socialist-led CFDT workers federation. He not only came out against the nuclear deterrent which both Socialist and Communist leaderships now accept, but also demanded "a different kind of growth". Like the ecologists, M. Maire and his federation stand for regional and industrial self-government. Disaffection in the CFDT is more serious for M. Mitterrand, the Socialist leader, than his bickering with the Communists.

(*The Guardian*, 28 Sept. 1977).



A SOLAR SOLUTION TO UNEMPLOYMENT

RICHARD GROSSMAN and GAIL DANER, OF THE US group Environmentalists for Full Employment, argue that, rather than exacerbating the US unemployment situation as the corporate energy lobby claim, implementation of energy-conservation measures and a transition to renewable energy sources such as solar energy could allow the US to achieve healthy environmentally benign jobs for all.

Corporate energy interests, along with most industrialists and some agencies of the government, are vigorously urging the rapid expansion of energy production. The energy systems they are promoting are large in scale, technologically complex, costly, wasteful, environmentally destructive and dangerous to energy-industry employees and the public.

An increasing number of Americans are becoming convinced that these systems — such as nuclear fission and fusion, conversion of coal and shale to gas and oil, expanded coal-fueled electric generation — are *too destructive* to the public's health — as well as to workplace and natural environments — to be acceptable. These citizens propose instead a large decrease in the nation's waste of energy, plus immediate commercialization of proven solar-energy technologies and development of solar technologies almost ready to be commercialized.



Most proponents of the large-scale complex energy systems concede the systems they are promoting expose the public to a variety of dangers. But, they contend, there is absolutely no other possible way to meet the nation's energy needs, to provide for a strong economy, and to create sufficient numbers of jobs.

Yet, current high unemployment, along with a succession of economic crises, have been taking place while national energy use has been at an all-time high, and increasing.

Environmentalists For Full Employment disagrees; there is another way.

The increased energy efficiency plus solar energy choice can provide sufficient energy for a prosperous economy. In fact, such a solution to the nation's energy problem *actually leads to a more stable economy and to more jobs* than does the large-scale system scenario. It does so with less pollution, less disease, less social disruption, and less interference with community, labor union and individual rights.

The Substitution of Energy for Labor

Historically, industry has sought to substitute energy for human labor. The amount each working person could produce has therefore increased steadily. But after substitution of energy for labor in each process, the total number of workers needed *decreased*. The only way the total number of workers could increase would be if there were also a rise in the demand for products. In other words, more jobs would have to be created by the increased demand than were eliminated by the energy substitution.

What has kept the "more energy leads to more jobs" myth alive has been that accompanying a growing population has been a very large increase in the use of goods and services per person. There has also been a significant increase in energy use. It has thus *appeared* as if energy expansion had been causing economic expansion and increases in jobs. But *constantly expanding demand* has led to constantly expanding production and employment. As Louisiana State University's Professor Herman Daly has concluded:

Clearly, what is responsible for increasing total employment is the increase in total (goods and services), not the increase in inanimate power production, which by itself must decrease employment!

Productivity and Jobs

From industry's point of view, energy and investment dollars have been preferred to human labor. Automated equipment does not complain about unsafe working conditions, seek wage hikes, question the nature of jobs or products, or strike. And energy has been cheap, subsidized by the government and by the American people.

Goods-producing industries have therefore sought to use fewer workers (or at least make their employees work faster). Their goal has been to increase output per

worker, or "productivity". This has caused total employment in the manufacturing sector to decline over the last 40 years. Organized labor has supported this emphasis on "productivity", and has allowed the wage scales of skilled labor to be linked to the "productivity index". To management, this index is an important indicator of how well an industry is performing. But the "productivity index" is really an "automation index" — a guide to tell management how well it is doing in its drive to get rid of employees.

Labor's acceptance of "productivity" — that is, automation — as a criterion for wage increases has resulted in a widening of the earnings gap between those employed in high-energy industries (who are members of well-organized, powerful unions) and those working in areas where energy (and skill) requirements are low (and whose unions are less powerful)².

It has also resulted in the need for more and more energy, and in a decrease in the total number of industrial jobs. In 1971, the five largest manufacturing industries (primary metals; stone, clay and glass; food; chemicals; and paper) provided only 7.3% of the nation's jobs. From 1950-1970, there had been no employment growth in these industries; yet, their gross energy consumption during these years increased greatly³.

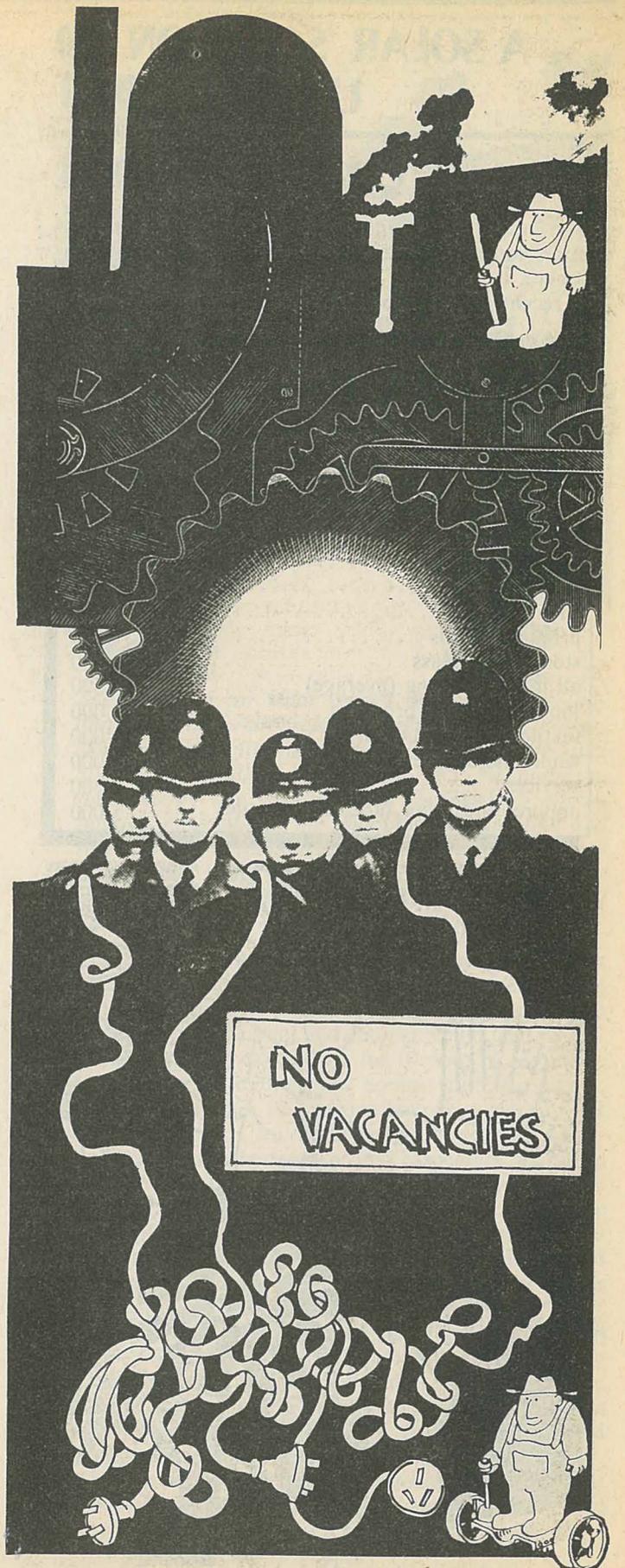
In the steel industry from 1959-1969, employment declined from 450 000 to 100 000 as production increased 45%, and energy use increased⁴.

The aluminium industries in the Pacific Northwest provide a particularly glaring example of high-energy, low job ratios. According to the Bonneville Power Administration, this industry consumes 25% of the region's electricity, and provides but *one-half of one per cent* of the total jobs in that region⁵.

In the agricultural sector, the use of energy — for fertilizers, chemicals and automated equipment — increased the output per worker. But this increase in 'productivity' led to a steep decline in the number of people employed. In 1970, agricultural employment was less than half of what it had been in 1920. In 1920, about 27 billion (US=10⁹) person-hours of labor were needed, compared with only about 2 billion person-hours 50 years later. Energy input increased more than 4 times over that period⁶.

In all, the major energy-producing and energy-using industries consume a third of the nation's energy. Yet, they directly provide only about 10% of the nation's jobs⁷. Energy companies claim that *indirect* employment created by energy is substantial. But as Professor Daly points out, *any* investment — even in welfare and unemployment compensation — leads to indirect job creation. And as noted above, energy, once available, *generally ends up replacing jobs*.

Where have the new jobs come from? Since World War II, new jobs have been created overwhelmingly in the merchandising and service sectors of the economy. Between 1947 and 1970, employment in these areas increased 95%⁸. These jobs have required relatively low amounts of energy, capital and resources. They also have caused less pollution and environmental disruption than industrial jobs.



A SOLAR SOLUTION TO UNEMPLOYMENT

Capital Investment

The major energy-producing and energy-using industries consume the lion's share of national capital investment.

A recent ERDA report concluded:

It is probable that the nation's single greatest investment in energy in the future will be in the area of electricity generation, transmission and distribution.

CAPITAL INVESTMENT PER JOB¹⁰

Industry	Capital investment per employee
petroleum	\$108 000
public utilities	105 500
chemicals	41 000
primary metals	31 000
stone, clay, glass	24 000
all manufacturing (average)	19 500
food & kindred products	18 000
textile mill production	11 000
wholesale and retail trade	11 000
services	9 500
apparel and other fabricated textiles	5 000

Amory Lovins has calculated that investments in large-scale centralized energy systems as proposed by people in ERDA, FEA and assorted energy monopolies, would consume three-fourths of all private investment capital in the United States⁹.

These large capital investments result in small numbers of very expensive jobs. A 1977 report by The Conference Board found that investment to create each job in energy-producing and major energy-using industries was much higher than investment to create a job in areas which use smaller amounts of energy. See Table.

It is clear from these figures that it takes about 21 times the amount of investment to create a job in the petroleum industry than it does to create one job in the apparel and textile industry. Jobs created by investment in public utilities are the second-most expensive: about \$105 500 each. The investment needed to create a manufacturing job on the average is about \$19 500, which is about *one-half* of the amount required for a job in the chemical industry, and about *one-third* of what is required per job by the primary metal industry. Investment in "all manufacturing" is about *double* that needed to create a job in wholesale and retail trade, or in the service sectors of the economy.

But despite the huge capital investments required, and the small numbers of jobs created; despite the inefficiencies and the waste of non-renewable fuels; and despite threats to human health and local autonomy, industry promotion of their large-scale complex energy systems continues. (In the past year, for example, over one-half of all new homes constructed had all-electric heating, cooling and cooking systems.)

Energy Efficiency and Jobs

Energy production is not a goal in and of itself. Energy should be utilized to serve people, to provide the freedom for all people to have richer, easier, healthier lives. That a nation uses vast amounts of energy does not reveal to what extent the energy is actually being put to wise, effective use by its people.

The best approach to energy sufficiency, economic prosperity and jobs is that which combines increasing energy efficiencies with a variety of diverse and safe energy-supplying technologies. Each energy-producing technology should be used to do what it does best, and should be matched in scale and energy quality for the way in which its energy will be used. And the more the fuels for these new energy systems are renewable, the better.

This approach is not 'anti-technology', as sometimes is alleged by the large energy interests. In fact, technological innovation will be a key to achieving success with this approach . . . but the technologies involved need to be ones which can be controlled by the American people, not ones so elaborate and complex that people have to be kept far away from them or from decisions concerning them.

A preliminary analysis for the FEA¹¹ provides specific breakdowns of some energy-conservation techniques, costs and resulting employment. This report examined the prospects of limited energy efficiency increases in

34 372 private homes. The technical work called for was simply the installation of ceiling insulation and automatic thermostats, and the retrofit or replacement of furnaces.

The analysis concluded:

By 1985, natural gas supply would be increased because of the saving of 1212 billion cubic feet. This is the equivalent of the gas to be obtained from the major discovery at the Alaskan North Slope. It is also about the equivalent of the output of 39 one thousand megawatt electric thermal power plants. Consumers in these 34372 homes would save \$1.7-\$2.3 billion in heating costs.

The work would cost \$7-\$10 billion, compared with \$17-\$20 billion for 39 large fossil-fuel power plants; 487000 jobs over 7 years would be created: 122000 in manufacturing, 366000 in local installation.

The report also stressed that employment associated with energy conservation techniques is local, low- to moderately-skilled, and concentrated in or near urbanized areas which are experiencing the most acute unemployment problems. In contrast, centralized, expensive energy production complexes usually have to bring in highly-skilled labor from outside the construction area.

In sum, increasing energy efficiencies will supply the nation with a substantial source of energy. The savings of money and the reduction of energy waste will generate a broad range of economic and environmental benefits throughout the country, and create large numbers of safe, socially-useful jobs.

For new energy sources, the nation needs to utilize the unlimited energy which is available from the sun.

Solar Energy

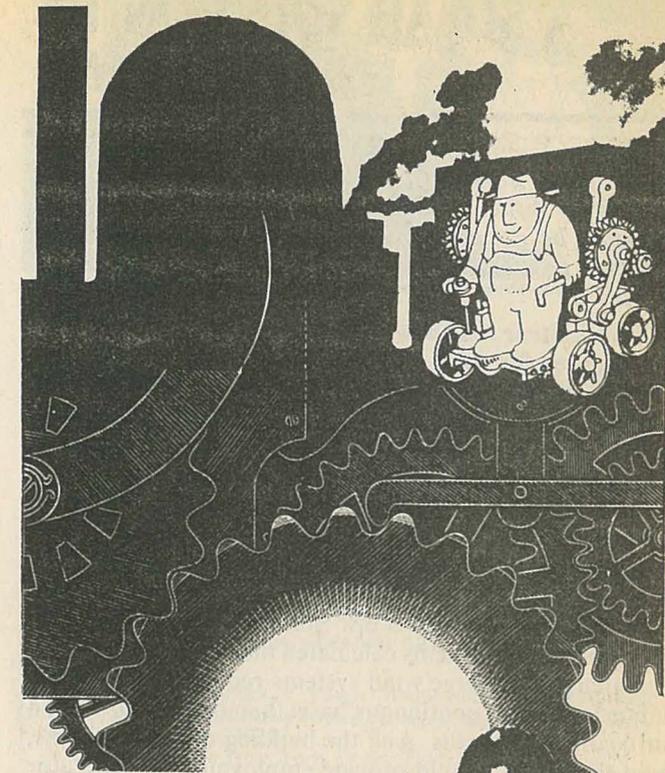
The solar energy reaching the United States in twelve hours is equal to the nation's yearly energy consumption.

Various technologies exist which can utilize this abundant and safe source of energy: solar plate collectors for heating and cooling of buildings, and for heating water; photovoltaic cells for converting sunlight directly into electricity; wind energy systems for producing electricity, pumping fluids or compressing air; biomass conversion for creating fuels from organic matter.

For all solar energy systems, the fuel is renewable. For all except biomass conversion, the fuel is free. If energy quality is matched to its ultimate use, each of these systems except photovoltaic conversion has lower capital requirements per unit of energy delivered to the user than does nuclear fission and production of synthetic fuels from coal. All these solar technologies readily lend themselves to small, decentralized installations.

The evidence is overwhelming that solar-energy technologies are available today, and that they offer many technical, environmental and financial advantages over other energy systems. They also provide significant employment benefits.

The Massachusetts Energy Policy Office recently concluded that if by 1985 one-half of all buildings in that state were to use solar energy for hot water production, 32 000 jobs would be created. In addition, 600 million gallons of oil would be saved per year, and \$480 million retained for spending within Massachusetts. The report stated:



The potential for solar energy seems virtually unlimited. With widespread adoption of solar power, Massachusetts citizens could cut their collective fuel bills by \$120 million annually by 1985. Furthermore, solar energy has vast potential for new job opportunities, especially in the plumbing, construction and research and development areas . . . It's safe to say that by 1985 more jobs could be available from solar power (directly and indirectly) than from offshore oil and new nuclear construction combined.¹²

Frank Mills, of the Sheet Metal and Air Conditioning Contractor's Association, has reported that retrofitting just 3 million private homes to 60% reliance apiece on solar energy for heating and cooling would lead to 12.2 million hours per year of work for 10 years. And putting solar heat in 2.3 million new homes, at 60% reliance, would create another 12.2 million hours per year of work for ten years . . . for sheet-metal fabricators, sheet-metal installers, asbestos workers, carpenters, plumbers and pipefitters. Increasing the number of installations to half of all private homes would mean about 5 times the number of hours of work. In addition, thousands of jobs would be created in retrofitting and new installations of solar systems in commercial buildings, apartment houses and government buildings.¹³

The Laborer, a journal of the Laborers' International Union (AFL-CIO), found that jobs for its members in the solar energy field "could well mount into the hundreds of thousands". The union has begun a course in San Diego to train laborers in the installation and maintenance of solar and wind systems.¹⁴

The President of the International Association of Machinists and Aerospace Workers (IAM), Floyd Smith, told delegates at an IAM-United Auto Workers legislative conference in January 1957:

A SOLAR SOLUTION TO UNEMPLOYMENT

If, for example, the government launched a program tomorrow morning to equip each home in America with a rooftop solar water heater, scores of factories would be retooled and reopened. Thousands of jobs would be created for unemployed machinist and auto workers.¹⁵

Skip Laitner has shown that about 2½ times more jobs are required for solar-developed energy than for the same amount of energy-produced by nuclear fission.¹⁶ The job mix for the various technologies is different. Nuclear energy utilizes fewer tradespeople per professional scientist or technician than does solar energy; for nuclear, the ratio is about 2 to 1; for solar, it is 9 to 1.¹⁷ In addition, a broader array of skills is necessary for building and maintaining solar systems than for building and maintaining nuclear plants.

A report to the New York State Legislative Commission on Energy Systems calculated that the operation and maintenance of large wind systems require 2-4 times the labor force on a continuous basis than do nuclear fission or coal-fired systems. And the building of wind systems, said the report, would provide employment in generator and electrical component manufacture; sheet metal and structural steel fabrication; cement and wire production. The report emphasized:

*The construction phase for both wind with storage and wind without storage would employ thousands of electricians, engineers, heavy equipment operators, laborers, steel workers and other construction personnel.*¹⁸



MIT Professor David R. Inglis has determined that if windpower had a share of federal financial support commensurate with its promise, and if the money were spent "to encourage the rapid growth of a wind-turbine building industry," such an effort would utilize industrial facilities which already exist; motor companies which make gears, aircraft companies which make blades, electric companies which make generators.¹⁹ The FEA Project Independence Study estimated that to generate 23% of the nation's electricity with wind power, 140 000 person-years of employment would be created by 1985, and 245 000 by 1990.²⁰

Why, with the promise of solar energy so great, has progress been so slow?

The Politics of Solar Energy

Recent studies for the US government done by the General Electric Corporation, by Westinghouse, and by another large energy company — TRW — predicted that the energy contributions of solar technologies by the year 2000 would be minimal: General Electric's figure for solar heating and cooling was 1.6%; Westinghouse's 3.14%; TRW's was 5.77.²¹

Senator Gaylord Nelson, noting that these solar projection studies were performed by companies heavily invested in nuclear power, coal, natural gas and oil commented:

*The suspicion is unavoidable that these and other absurdly low estimates of the solar contribution during the next 25 years are not of what the estimators think the country COULD do if it put forward anything like the money and effort that went into nuclear development or moonshots, but rather what they hope the country WILL do. Not because doing so little is in the best interests of the great majority of Americans and other people of the world, but because doing so could possibly threaten existing investment in other technologies.*²²

James Piper, President of the Piper Hydro Company, testified before Senator Nelson's Committee on Small Business:

*I do not think Westinghouse can put its heart and soul into producing a good solar system.*²³

The FEA Project Independence Task Force found that among "factors which have inhibited" the growth of solar systems were: (1) a lack of federal or private industry interest and (2) underpriced, taxpayer-subsidized fuels.²⁴

An excellent example of federal indifference to solar energy development occurred recently in Fairfax County, Virginia. A school was completed there which is 100% heated and cooled by solar energy — the nation's first. Fairfax was unable to obtain government assistance for this project, so it sought money for a long time from other sources. Finally, the county received some funds from a university — in Saudi Arabia.²⁵

Government officials frequently say that modest sums appropriated for solar energy are as much as can be prudently spent, given the state of the art. They say that a "new" industry can progress only a little at a time. But

on some occasions when this country needed vigorous action, even the federal bureaucracies and private industry responded. For example, when specialized aircraft were needed during World War II, the fledgling aircraft industry was able to increase production from 3 623 in 1938 to 96 318 in 1944.

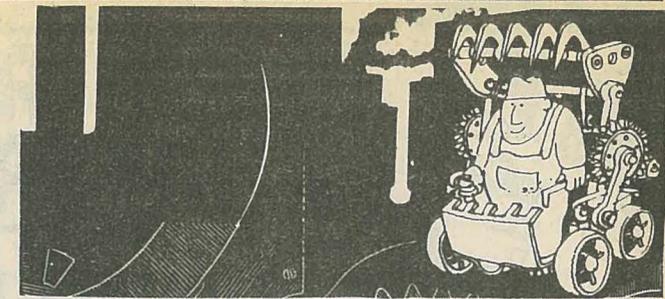
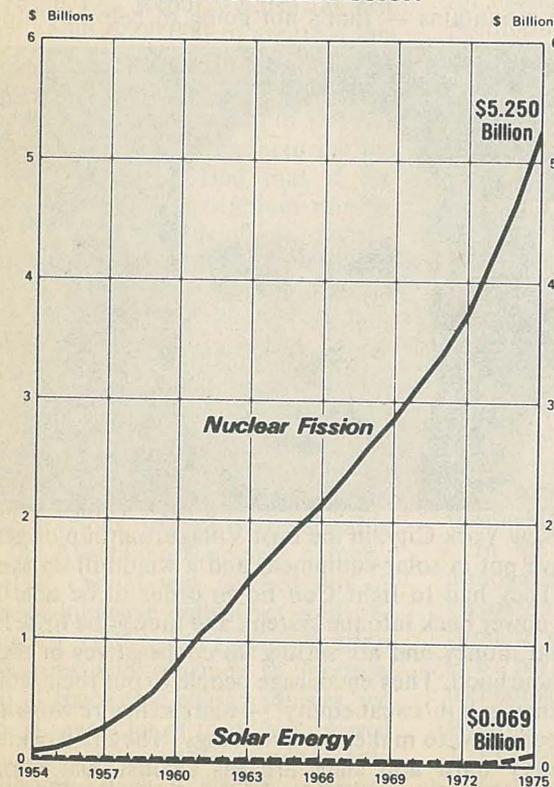
The FEA concluded:

It is assumed that wind energy systems are not more difficult and probably far less difficult to produce than World War II aircraft.

No federal funds went to solar research and development prior to 1970. Since then, the solar budget has been increased each year. Although the percentages increases of each year may seem large, the total dollar amounts allotted are nonetheless puny, especially compared to federal allocations for other energy areas. The chart below compares allocations of federal funds to solar and nuclear technologies:

The Carter Administration has doubled the outlays requested for conservation, increased the solar request slightly, and decreased the funds requested for the liquid-metal fast breeder nuclear reactor demonstration project by about one-third, compared to the Ford Administration's fiscal year 1977 budget. But other categories of nuclear fission were increased, and nuclear fission absorbed about 40% of ERDA's budget increase. President Carter's proposed funding of nuclear fission and nuclear fusion technologies thus ends up about **four times** that of conservation and solar technologies combined, despite the significant advantages in economy, employment, safety, and near-term feasibility of conservation and solar energy.

FEDERAL EXPENDITURES FOR SOLAR ENERGY AND NUCLEAR FISSION²⁶



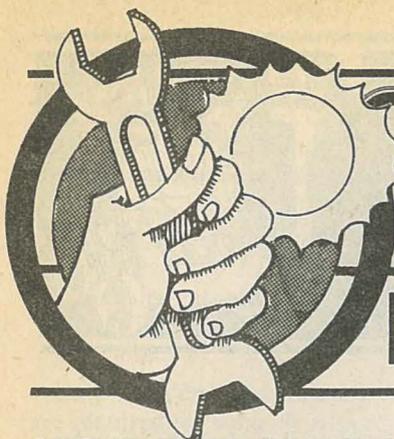
Conclusion

Many Americans are ahead of their leaders in understanding the causes of the nation's energy and unemployment problems. They are willing to seek solutions which may not necessarily coincide with corporate myths. They realise that energy efficiency and solar technologies are the methods by which the public can be assured that enough safe energy will be available; that the people will be able to control its production and use; and that there will be sufficient numbers of jobs available in diverse activities throughout a prosperous nation.

References

1. Herman Daly, "Electric Power Employment and Economic Growth," in *Towards A Steady State Economy*, San Francisco: W.H. Freeman & Company, 1972.
2. A. H. Raskin, *The New York Times*, January 26, 1977.
3. The Ford Foundation, *A Time To Choose*, Cambridge: Ballinger Publishing Company, 1974.
4. *Dollars and Sense*, September, 1976.
5. Natural Resources Defense Council, *Choosing An Electrical Energy Future For the Pacific Northwest; An Alternative Scenario*, Palo Alto, 1977.
6. Denis Hayes, *Energy: The Case For Conservation*, Washington, D.C.: Worldwatch Institute, 1976.
7. Ford Foundation, op. cit.
8. Herman Daly, op. cit.
9. Amory Lovins, testimony before a joint hearing of the Select Committee on Small Business and the Committee on Interior and Insular Affairs, United States Senate, December 9, 1976.
10. The Conference Board, *Capital Invested*, Road Maps of Industry No. 1799, New York: January, 1977.
11. Federal Energy Administration, *Conservation Investment As a Gas Utility Supply Option*, Washington, D.C.: 1976.
12. Energy Policy Office, State of Massachusetts, *The Use of Solar Energy for Space Heating and Hot Water Systems*, Boston: April 1976.
13. Frank Mills, February 15, 1977.
14. *The Laborer*, "Solar Energy: Source of Power, Key to Jobs," June 1976.
15. *The Machinist*, "Solar Energy Can Generate A Lot of Heat, Power, Jobs," November, 1976.
16. Skip Laitner/Critical Mass, *The Impact of Solar Energy and Conservation Technologies of Employment*, Washington, D.C.: May 1976.
17. Federal Energy Administration, *Project Independence Solar Energy Task Force*, Washington, D.C.: 1974.
18. Monroe, Jackson, et. al., *Energy and Employment in New York State*, A report to the New York State Legislative Committee on Energy Systems, Albany: May 3, 1975 (draft).
19. David R., Inglis, "Wind Power Now", *Bulletin of the Atomic Scientists*, October, 1975.
20. Federal Energy Administration, *Project Independence Report*.
21. Senate Select Committee on Small Business: Solar Energy Hearings.
22. Ibid.
23. Ibid.
24. Federal Energy Administration, *Project Independence Report*.
25. *The Washington Post*, January 3, 1977.
26. Senate Select Committee on Small Business, Solar Energy Hearings.

This article is an edited version of the booklet Jobs and Energy (Environmentalists for Full Employment, 1977). Chain Reaction thanks EFFE for permission to use their material.



CHAIN REACTION INTERVIEW

Richard Grossman

Chain Reaction talks to Richard Grossman, Coordinator of the US Group Environmentalists for Full Employment, on his Australian tour.

Chain Reaction. How did you become involved with Environmentalists for Full Employment (EFFE)?

Richard Grossman. I worked during the late '60s and early '70s in various states on the east and west coasts trying to develop job-training programmes. Then I tried to live on an abandoned farm in a rural area in New York (State), and after a while it really became impossible because of the increasing insults on the environment, and I started getting involved in zoning fights to keep the developers out. I moved back to San Francisco and got involved in the anti-nuclear (referendum) initiative in California, Proposition 15. The main issue we got beaten on was jobs and economics. The nuclear industry essentially refused to focus on the danger issue, but instead threatened economic chaos and freezing in the dark if we didn't have nuclear power. At about that time, about two years ago, EFFE was formed in Washington, and I joined it as Coordinator.

CR. What are EFFE's aims?

RG. The idea is to promote policies and programmes that create employment, that are environmentally sound, and to work with environmentalists and community activists. Also to try to bring people together, to bring information to labour, and bring environmentalist and labour closer together.

We've tried to show that the solution to both the energy and unemployment problems is real energy efficiency, which doesn't mean everybody going back to the Stone Age and freezing and starving in the dark, but getting rid of the 50% waste in our total energy use, and using all that money we would save to create new kinds of jobs to meet human needs — like social services, and manufacturing solar energy equipment.

CR. Can this be done without major political and economic changes?

RG. One of the problems that many of the people labeled environmentalists in the US, are not willing at this time to focus on, is the extent of the effort necessary to go up against the energy companies, the US Government, and the majority of the labor bureaucracy. I don't think I'm capable of laying out a proposal for the kind of radical change that is necessary — the only thing I'm sure about is that it's got to come up from the grass roots.

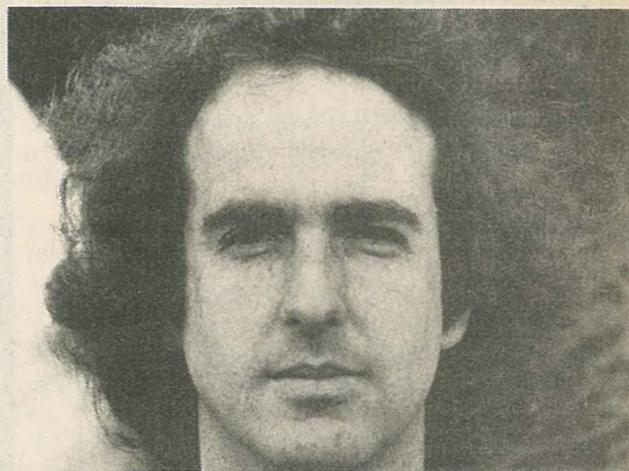
The important thing is for the small businesses and environmentalists getting into solar to realise the magnitude of the political problem.

CR. Are you getting a good response from labor organisations?

RG. I have to say no. I recently did a presentation on jobs and energy to a rather high level of AFL-CIO (a large US union) legislative lobbyists and researchers. Even though I was invited, there was significant hostility — a lot of real yelling and shouting, which I rather enjoyed — but we just got nowhere. Even the Sheetmetal Workers, who know the huge stake they have in solar, still support nuclear energy politically because of other unions. But unions are less monolithic than they appear and I think there's more action going on at a local level. In NY State there's a group called the Labor Action Coalition of rank and file unionists from 19 unions who have got together to work for municipal takeover of power utilities in the state.

CR. How difficult do you think it will be to develop a society based on alternative energy sources?

RG. I think it's extremely difficult for alternative communities to exist in what is essentially a very hostile environment, economically and socially. As long as the alternatives are viewed as only good for weirdos living off in the mountains — that's not going to help anything.



In New York City, in the East Village, a group of people have put in solar equipment and a windmill on their roof. They had to fight Con Ed in order to be able to pump power back into the system, and they got a little bit of grant money and are setting up cooperatives in their neighbourhood. They encourage people to put their work in — they call it 'sweat equity' — and as they're working they learn how to make the technology. They're working very very hard and they are up against just about everything. The idea is that you can earn your living helping other people get into the same thing.



ENERGY AND EMPLOYMENT IN AUSTRALIA

JOHN ANDREWS comments on the jobs and energy situation in Australia and describes the highlights of the recent Australian tour of Richard Grossman, Coordinator of the US group, Environmentalists for Full Employment.

Let's begin with a 'Grossman' for Australia.

From Fox Report figures¹, it will cost about \$500 000 to create a job for one uranium miner at the Ranger uranium mine in the NT. Now assume a capital investment of \$20 000 to create a job in manufacturing industry². We then find that if the capital invested in uranium mining were to be sunk instead into our ailing manufacturing industry, it would create no less than 25 times more jobs. And wouldn't we all (Uranium Producers Forum excepted) prefer an Australian-made shirt than a pound of yellowcake?

It is undoubtedly the case that the broad thrust of Environmentalists for Full Employment's argument (see previous article) is transferable to the Australian economy: namely, that if capital was leached out of energy-intensive industries and re-injected into energy-conservation measures and schemes to increase use of renewable energy sources, we would save a lot of fossil fuel, be well on the way towards a sustainable economy, have a cleaner environment, and achieve all this while

creating hundreds of thousands of badly needed jobs. We might even get full employment!

For example, the new capital investment per job in the crude oil, gas and coal industry sector is \$5300 p.a., while the energy produced per job in that sector is a gargantuan 126 000 GJ p.a. At the same time, the new capital invested per job in the fabricated metal-products industry (solar collectors come under this category) is a mere \$400 p.a., and the energy used per job p.a. is only 87 GJ³. Obviously a transfer of capital between those two sectors would save thousands of gigajoules of energy and create well over ten times more jobs than would be lost.

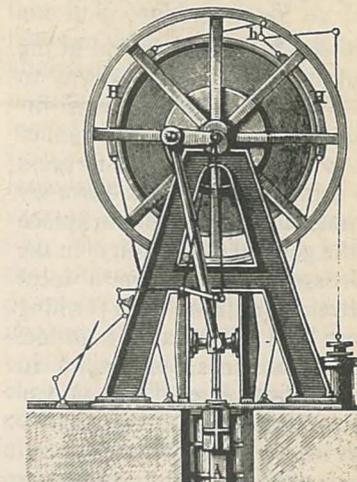
But, as Alan Roberts queried at Richard Grossman's Melbourne seminar: Is such a capital transfer really that easy? Would there not have to be a number of very basic changes to our economic and political system before this could take place? Our large companies, for instance, would need to reveal a hitherto well-hidden altruistic streak, if they were suddenly to switch some of their funds from capital- and energy-intensive industries to considerably more labour-intensive ones. They would have to accept a lower rate of profit in return solely for the nation's long-term thanks for promoting energy conservation and solar energy.

Environmentalists for Full Employment (EFFE) in its publications underplays the basic political and economic forces opposing the course it advocates so lucidly. This appears to be largely due to the economic and political conservatism of the audience EFFE is addressing. As Richard Grossman explains⁴: "the environment movement in the USA . . . is so far away from working for radical economic change that even mild suggestions on our part are viewed with concern, and the education necessary among our colleagues is considerable."

In the somewhat rarefied 'leftish' atmosphere which pervaded most of Grossman's Australian tour, he came to give increasing emphasis to the political dimension to technological change. At his Sydney seminar, he argued:

"Multinational corporations — from the 1973 Arab oil embargo — have sought to show the people who's

boss, to punish worker restlessness in N. America, Europe, and here in Australia. Labour unions were starting to demand participation in production decision-making, too high wages, too short a work week. They needed to be shown that the multinationals can snuff out their



lives in a flash — by cutting off oil, by not delivering natural gas during last winter's especially cold weather, by extracting higher and higher proportions of salaries for energy which in turn would be used to put people out of work, by threatening to shut down factories if people kept complaining of dangerous conditions, environmental cancer, general environmental destruction, and high unemployment rates.

"So all these 'problems' seem to blend as one: that of control of economic and political power to make the basic decisions over our own lives."

Grossman also struck the core of the problem with solar energy when he said: "Contrary to propaganda — which I see has gotten to your shores — utilisation of various solar technologies is not a technical problem, but a political one."

However, his contention that solar technologies are "inherently decentralised, inherently anti-monopolistic," came in for a bit of criticism at the Melbourne seminar. As several people pointed out, highly-centralised large-scale solar technology (such as central solar-electric power stations) could be developed which slotted perfectly into the present economic and political system, and which was so complex and expensive that only the multinationals could produce it. Grossman was clearly aware of this

danger, and probably the issue arose out of a semantic slip on his part in using the word "inherently". Everyone agrees, solar technologies 'lend' themselves particularly well to decentralised use but they have no inherent characteristic which dictates that they can only be deployed in this way.

There was broad agreement at the Melbourne seminar that the way to ensure solar technology was introduced in a decentralised manner subject to local control was to press for its deployment in this form by grass-roots action in the workplace and in the general community. In the US, Grossman said, "On a local level, diverse coalitions are forming to oppose high utility rates, high fuel prices, high rents, cutbacks in schools, medical care. There is real ferment at the grass-roots level — which is where the only real opposition to corporate and government control is taking place."

Introducing the 'full employment' workshop at the Sydney seminar, John Halfpenny echoed this political theme: "You can't treat environmental problems in isolation from a number of interrelated crises," he said. "Today, workers are caught on the horns of a dilemma: they suffer through unemployment if growth slows down. The environment they live in suffers through unplanned growth." Halfpenny called for a broad movement for political, economic and technological change, to work for:

- definition of social objectives, and then choice of the best means of production (e.g. appropriate technology), for achieving them;
- expansion of public ownership of the means of production and natural resources;
- more democracy in the workplace and in the community;
- and eventually, a new world economic order.

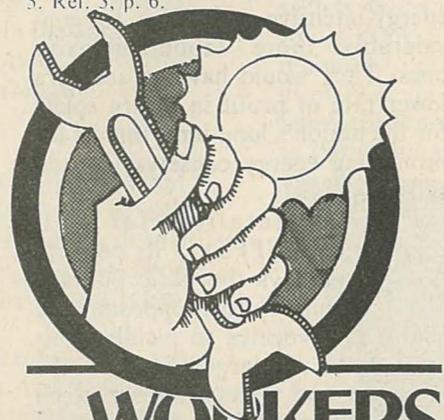
As Jeff Nicholls pointed out²: "The expansion of democracy from its present rather tenuous foothold in our parliaments carries with it increased responsibility for everyone. Those who produce things must become responsible for what they produce, those who consume responsible for what they consume, and we all must assume responsibility for the impact our society has on the world and other people who live in the

world."

The Melbourne seminar ended with the passage of a motion calling on the Australian Conservation Foundation (co-sponsors with MAUM and the AMWSU of Richard Grossman's tour) to convene further meetings between environmentalists, unionists, and other groups interested in pursuing joint discussions on the jobs and environment connection. In sum, Richard Grossman's visit has been a tremendous stimulus to forging closer links, and unity of purpose, between the environmental and workers movements in this country. We thank him for coming.

References

1. Ranger Uranium Env. Inquiry 2nd Report, Aust. Govt. Publ. Service, Canberra, 1977, see p. 76, p. 176.
2. Figure for USA from *Jobs and Energy*, Environmentalists for Full Employment, Washington, 1977, p. 6. The Australian figure is unlikely to be very different.
3. "Jobs and Energy", Jeff Nicholls, paper presented to 'Jobs for Use, Not for Waste' seminar, Sydney, 11 Sep., 1977. Nicholls warns that these figures need to be treated with caution since reliable data was difficult to discover.
4. Private Communication, Aug. 1977.
5. Ref. 3, p. 6.



WORKERS AND GREENIES

A COALITION FOR TECHNOLOGICAL CHANGE & MEANINGFUL WORK

As in no other part of the world, we have witnessed over the past few years in Australia trade unionists and environmentalists uniting to stop numerous developments which both

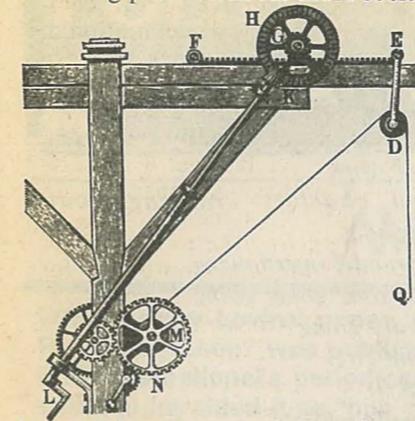
regarded as actually or potentially harmful to the environment and contrary to the interests of the community. Green bans on demolition of historic buildings in Sydney, the anti-Newport power station action, and the campaign against uranium exploitation come readily to mind. There is now, I believe, a growing awareness among sections of both movements of a need to move beyond mere *reaction* to events and instead *take the initiative* to push for positive changes in the workplace and in the general community.

Many workers are beginning to demand not just jobs with a fair wage, but jobs which are also fulfilling, meaningful, dignified, healthy, in which they choose the products they make, and how they are made. Many environmentalists now see such democracy in the workplace as an essential prerequisite for transforming our productive system so that it meets our material and cultural needs in an environmentally benign manner, drawing on everlasting sources of energy, and efficiently recycling other natural resources.

There is one area in particular where environmentalists and workers in this country face a great challenge. This issue could dangerously divide the two movements, or draw them immeasurably closer together.

The present federal government see foreign exchange earnings from uranium exports as partially offsetting the enormous oil imports bill we will face when Bass Strait oil reserves run out around 1986. On the high-level estimate of export earnings from uranium given in the Second Fox Report¹ these would meet about half the greatly expanded oil imports bill in 1995². But of course, they won't. The international market for uranium is likely to collapse well before 1995, and uranium will not be leaving these shores anyway. As we canvassed in the last *Chain Reaction*, the only way to avoid a disastrous balance of payments crisis and fragile national security situation is to conserve oil (e.g. by making fewer cars with better fuel economy and longer lifetime), expand public transport and restructure cities to reduce the need for mobility. A draconian oil-conservation policy would have an equally draconian effect on an already depressed Australian car in-

dustry. And it is right here that the challenge lies: How to devise alternative employment for car workers involving production far more social-



ly useful and environmentally appropriate than the motor car? In the absence of such an alternative plan, environmentalists and unionists face a bitter conflict — conserve energy or jobs?

There are already some encouraging developments. Addressing the Melbourne jobs and energy seminar during Richard Grossman's visit in September, Max Ogden, an Education Officer with the AMWSU, said that discussions were already under way between AMWSU shop stewards and workers in the car industry in Melbourne, investigating possible alternative production and transitional strategies. Meetings are also being convened under the People's Economic Programme between the AMWSU, the Australian Railways Union, the Vehicle Builders Union, Citizens Against Freeways and other groups, to work towards an alternative transport policy based on public transport for Melbourne.

At the Melbourne seminar, Max Ogden stressed the lessons to be learnt from the long struggles of the Fiat car workers in Italy. Through patient action to change 'work organisation' — i.e. "those technological and organisational procedures which directly influence the working conditions of the workers"³ — the unions at Fiat plants have been able to expand workers' consciousness to the point of making demands concerning the organisation and production of the company as a whole. As a result of union pressure, in 1973 Fiat signed an agreement with the unions in which the company agreed to

transfer investment to the economically-depressed south of Italy, and build new factories and modify existing ones for production of, for example, railway rolling stock, buses, tractors and diesel engines, for which Fiat workers believed there was a real social need⁴. Just as in Australia where about 65% of car-industry process workers are migrants, the majority of car workers in the industrial cities of northern Italy such as Turin were 'forced migrants' from the south where unemployment was very high.

Positive workers action of this kind is of course, similar to the initiative at Lucas Aerospace in the UK (see *Chain Reaction*, Vol. 2, No. 4, Vol 3, No. 1, 1977), where the workers are fighting the threat of redundancy by suggesting they produce alternative products such as kidney machines, solar collectors and heat pumps instead of components for military aircraft. One significant difference between Lucas and the car industry is the level of skill of the workers. Aerospace workers are some of the highest skilled workers in the world, whereas most auto workers have had little or no chance to develop their skills and initiative.

At a three-day AMWSU seminar on industrial democracy I attended in Melbourne in June, the Lucas initiative was one topic of discussion. Pleasingly Dave Elliot's *Chain Reaction* article on Lucas (Vol. 2, No.4, 1977) was circulated among the 30 shop stewards from a variety of industries in attendance. The interest in the Lucas approach was considerable — once given the chance to think along these lines, there was certainly no shortage of suggestions from the shop stewards as to alternative more socially-useful production in their respective industries.

As well as in the car industry, another Lucas-type initiative is brew-

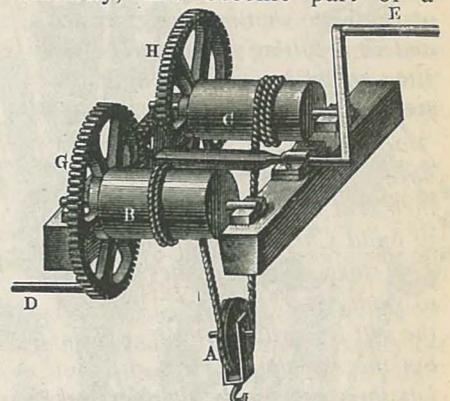
"We need to develop an understanding that environmentalists and workers are one."
Jack Munday

ing among workers at the large Melbourne nut and bolt manufacturer, Ajax Nettlefolds. Workers there are going to use the coming Industries Assistance Commission's

hearing into this industry to proffer advice on an alternative corporate policy.

One thing is certain: industrial democracy and the associated need for socially-useful environmentally-benign production is growing as a major issue in Australia.

As at Lucas in the UK, an important link could possibly be formed between workers involved in devising alternative corporate plans and the nascent 'alternative technology' movement experimenting with low-impact devices powered by renewable energy sources. The advent of industrial democracy is possibly the only chance of ensuring that alternative technology becomes people's technology rather than multinationals' technology. Both groups could well learn a great deal from each other through working for a common aim. In particular it might allow the alternative technology movement to gain greater political maturity, and become part of a



broader movement for political, economic and technological change. Otherwise, alternative technologists could remain a politically-irrelevant fringe group of do-it-yourself freaks, quixotically tilting at windmills while numberless workers toil away on mass production lines churning out the bearings for their electric generators.

References

1. Ranger Uranium Env. Inquiry Second Report, Aust. Govt. Publishing Service, Canberra, 1977, Appendix V.
2. Oil imports projection from Curve A, Fig. 5, J. E. Lane, "Some possible implications of rising petroleum fuel prices for transport", paper presented to Australian Transport Forum, May 1977, Melbourne.
3. "Work organisation and trade union policy at Fiat", paper presented at VIIth International Conference of Metal Industry Workers, Dec. 1974 Vichy, France, p. 1.
4. Ref. 3, p. 15.

John Andrews

MELBOURNE

Where we're sitting
 watching an American cop
 run with his gun
 the Yarra Yarra tribe
 sat together in calm tree halls
 listening to silence and others
 watching earth sky animals and
 rivers
 for food for spirit and body
 heaven on earth
 for a long time.
 Other tribes in the Continent
 did the same.
 In another land, Christian Britain
 a breeding of warriors mad on gull
 and hate
 life was hard
 and anyone wanting things easier
 and so revolting against the order
 often ended in over-flowing goals.
 Britain sold these prisoners to the
 Americas
 until the Independence
 then sent them to this Continent
 to build Christian Commerce.
 The rulers expected the Aborigines
 to want
 the gift of civilisation
 but the Aborigines
 felt their best lands had been taken
 and sacrilege committed
 against the trees and animals
 held in awe.
 They began an unequal struggle
 falling shattered by steel and alcohol.
 The colonies grew
 and businessmen speculating
 on hearing of good land
 came up the Yarra in 1834.
 They solemnly bought
 100 000 acres from the Yarra Yarra
 tribe
 for some blankets, knives,
 tomahawks, looking glasses,
 scissors, handkerchiefs, shirts,
 jackets, suits and flour.
 Melbourne had begun.
 It was flat land without inspiration
 for warriors and poor Irish
 and soon fenced families were
 dreaming in brick

their spirit outlet in sport and war
 their communion in beer glow
 hiding dark pasts.
 Unable to conquer a harsh continent
 under Asia
 they anxiously proved themselves
 near the coast
 in lost forts of money and ornament
 fell by a sound of earth.
 Their guilt was of a distrust
 the body and all nature
 and so calm tree halls
 fell for ornamental plots
 to softly disguise the fact where
 few knew themselves or each other.
 They formed many many groups
 for support
 churches, warrior sportsmen, ex-
 soldiers
 associations and committees
 for everything
 and political parties
 wanting ornaments and rights for
 few or for all.
 And the culture was always
 of the old world with the
 odd local trimming
 for identity.
 The sharp warriors
 of Britain's four seasons
 gradually changed
 under the always blue historical sky
 and
 wild trees with hanging dark leaves
 under Asia
 into warrior sloths
 riding in boxes on wheels
 scouring all the Continent and other
 lands
 for ornaments
 soul climaxing
 in relationships of brute and
 brutalised woman
 with money or anything
 hip-bumping footballers for certain
 the loner aghast
 as Mediterranean peasants join in
 the 1000 square miles of Melbourne
 of
 chrome and antique orgy.
 Work and work

and work
 and chariots crashing bodies
 mashing
 Larundel overflowing
 everyone going going
 sanity going
 drug city
 full of
 fragile addicts
 housewives and children.
 Objects becoming everything.
 Sun until after nature and soul and
 body
 had been desecrated
 in building this order
 was shuddering starting
 as some lonely tortured musicians
 and artists and writers and film-
 makers
 and some madmen and madwomen
 had been shuddering
 since realising
 humans
 were out of control
 too big for the planet and carrying
 bombs
 and most dangerous in ignorance
 of their true selves
 and may never know and
 had to go through disasters first.
 So many everywhere
 Not yet listening to silence
 and others
 to find a way
 in this late hour
 of living together with nature
 finding ourselves
 gently
 knowing a lunatic
 frightened by nature's endless
 depths.
 Knowing one is really linked
 with everything
 and everyone.
 And everyone
 is everything.
 And life can be happy all the time.
 Free.
 And part of all nature always flow-
 ing.
 Tony de Clifford

POLITICS OF ALTERNATIVE ENERGY

Is Alternative Technology Enough?

AMORY LOVINS - The Line Not Taken

When Amory Lovins' paper, *Energy Strategy: The Road not Taken?* was published last December in FOE International's periodical *Not Man Apart*, the editorial heralded it as "one of the most important things we have published, in *Not Man Apart* or anywhere else". In this paper Lovins sketches a soft energy path for the USA, involving no nuclear power, and total reliance on renewable sources of energy by the year 2025. In the following review, Brian Martin of FOE Canberra argues that while Lovins has admirably articulated the technological

options facing us, he has ignored the politics of alternative energy strategies. Lovins is concerned with a soft energy future without major political and economic change. Martin urges that the technological goal of a society powered by renewable energy sources should be integrated right from the start with wider social and political aims.

In the concluding section of this article, Amory Lovins forcefully replies to Brian Martin's criticisms.

What I propose to do here is consider the political origins of the choice of technologies, and then analyse the social and political implications of various components of a soft energy strategy. With this political background, it will be easier then to evaluate the political dimensions of Lovins' perspective.

The political roots of technological choice

It is becoming increasingly accepted that the reasons for the development, choice, and promotion of a particular form of technology are as much political and social as they are technological and economic.² Particular technologies tend to lead to particular types of social and political change, such as fostering equality or inequality. Therefore, technologies are selected in large part because they serve the social, political, and economic goals of those who promote them. And because it is powerful groups in society who have the greatest control over technological innovation, the goals shaping the choice of technologies are such things as fragmentation and powerlessness of the labour force, maximisation of profits and bureaucratic growth, and ideological justification for inequalities in wealth and in decision-making power.

For example, nuclear power is an appropriate way to produce energy if it is also important to maintain centralised control over investment and production, keep decisions in the hands of experts and their employers, and maintain a habit of passive consumerism in the populace. On the other hand, research and implementation of technologies for local collection and use of solar energy has been neglected for years in large part because these technologies cannot easily be placed under monopoly control, and hence are unattractive to energy utilities.

Lovins has spelt out many of the technological and economic problems associated with high technologies. There is also an increasingly militant citizen opposition to these technologies, based in part on high costs, environmental effects, the risks of major breakdowns, and

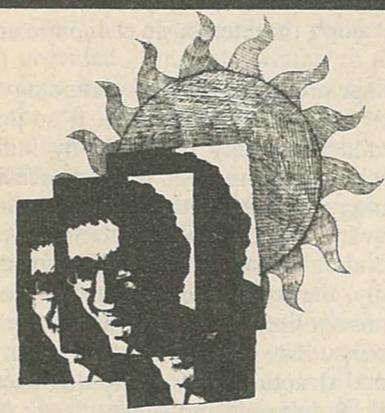
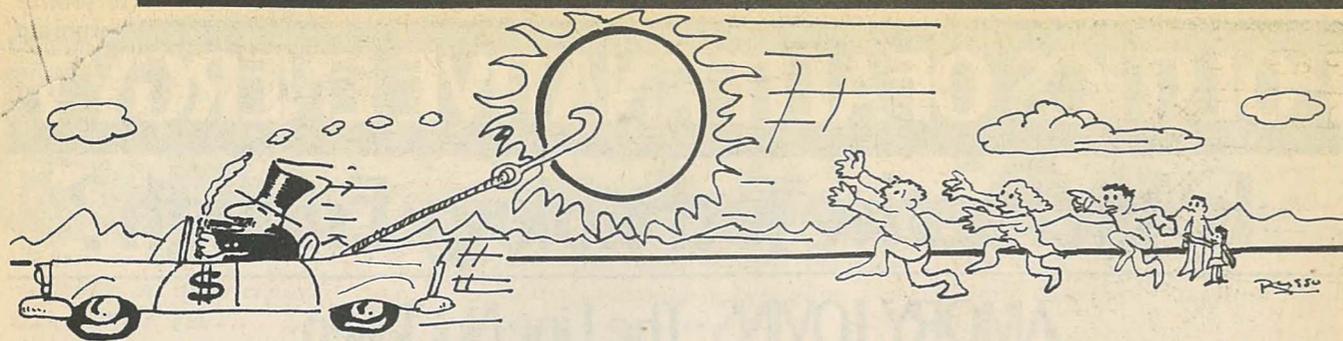


Illustration by Michael Vele

Amory Lovins' article, "*Energy Strategy: The Road Not Taken?*" is a well-documented and eloquent argument in favour of soft energy paths. Lovins considers first 'hard' energy paths, based on expanding energy consumption from coal, oil and nuclear sources, all based on high technology and centralised distribution. This path is 'hard' also in the sense of difficult, argues Lovins, mainly due to enormous capital requirements. Lovins then considers 'soft' energy paths, based on renewable energy sources, and diverse and accessible technologies suited for particular needs at the local level.

Lovins' study is an extremely valuable one to environmentalists, both in bringing together so much evidence and in coherently highlighting the alternatives before us. But for those who are interested in more than just the physical environment — who are concerned about equality, social justice, and a greater ability by individuals to decide and control their own lives — Lovins' perspective must not be accepted uncritically. What I suggest here is that Lovins, while admirably presenting the technological and economic side of the argument, leaves out many of the political dimensions of energy strategy. These political aspects must be tackled by politically conscious environmentalists.



ultimately on lack of control over developments. But a soft energy path which included widespread adoption of locally controlled technologies would pose real dangers to existing political and economic structures. People might be encouraged to take control over their lives in many ways: working conditions, education, health, and perhaps eventually choice of goods produced and control of production itself.

From the point of view of existing political and economic structures, there seems then to be a difficult choice: either a hard energy path beset by technological and economic difficulties and rising public discontent and opposition, or a soft energy path creating the conditions for a major challenge to the current political and economic structures. But this choice is falsely posed, because particular technologies do not necessarily lead to particular types of social and political change. That is, while particular technologies lend themselves to particular social and political structures, the connection is not automatic. For example, local production of solar heaters is easier than local production of nuclear reactors; but adoption of solar heaters does not necessarily lead to local production: centralised production would still be possible. Similarly, economic equality will be easier to achieve in a society with universal public transport, but equality is not necessarily promoted by adoption of universal public transport.

These considerations suggest a possible alternative to Lovins' hard and soft energy paths: a gradual transition to a combined system of hard and soft technologies, the transition to soft technologies occurring as soon as they can be introduced in a form that maintains the essentials of present social, political and economic structures.³ Already we can see plans for expansion of nuclear power generation and serious research into massive orbiting solar collectors, and a rapid increase in energy conservation measures (recycling, insulation) and the beginning of a boom in applications of solar energy.

What then are some of the significant features of present society which vested interests will attempt to maintain in the transition to a different energy path? Some of the most important are: (a) private control over production; (b) economic inequality; (c) political inequality, in particular the control over the design of society by a few.

With these features in mind, let's consider some of the possible components of an energy strategy.

Component 1: Energy conservation. This component of an energy strategy challenges none of the essential features of present society. It is likely to be opposed only by the few groups directly affected adversely, such as

electric utilities and uranium mining companies.

Component 2: Solar energy for heating. This highly touted alternative to coal, oil and electricity does not really threaten present institutions as long as the physical hardware is centrally produced, the units purchased on the market and used by individual households. Of course there is and will be tremendous opposition to the widespread introduction of solar energy by energy utilities, oil companies, and other proponents of centralised high technology. But as the ecological and economic, and hence political, disadvantages of hard energy paths become more apparent, reformers will fight for the necessary regulations to promote solar energy — in terms that don't threaten basic economic and political patterns.

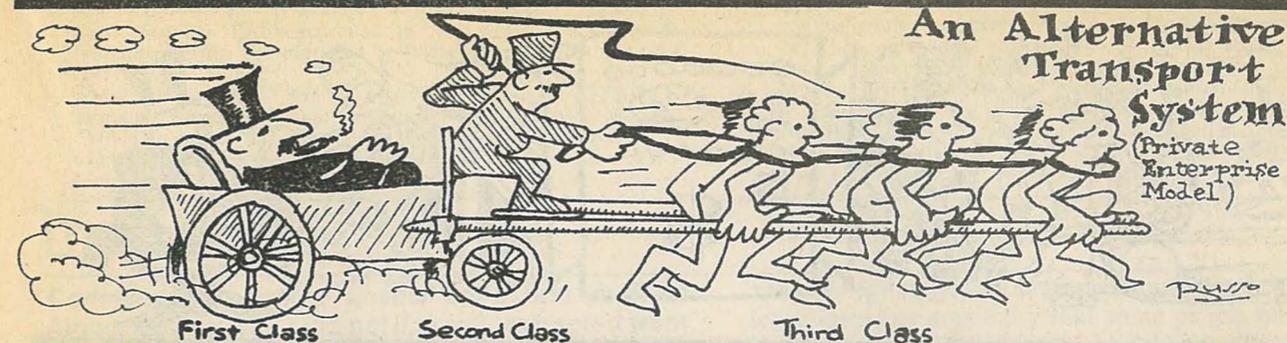
The challenge presented by solar technology is that it is relatively easy to develop the technology so that it can be understood and eventually produced by individuals or small groups. Furthermore, it is more sensible to use solar technology in conjunction with small groups of households (with, for example, a common reservoir of hot water), a development which might foster collective action. Finally, the basic resource, energy from the sun, cannot be monopolised or easily used for profit.

If solar energy is to be introduced without disturbing current societal structures, it is likely that its widespread adoption will be delayed, and that:

- emphasis will be on research into more sophisticated applications (such as electricity from solar energy);
- solar technology will be designed and regulations drawn up (for example, building codes) so that the technology must be bought on the market at a relatively high price;
- developments in other areas (such as tax concessions) will ensure that the benefits of solar energy go first to the wealthier portions of the population. Even with present social arrangements, it is apparent that the better-off suburbanites (with more land and sufficient money to install solar systems) stand to benefit from solar technology much more than inner city dwellers.

With appropriate regulations concerning safety and visual amenity, a relatively sophisticated technology, and centralised organisation of installation, distribution and use (e.g. solar systems as part of conventional house construction), the encouragement for self-management will be minimised.

Component 3: Less energy for transport. The present transport system depends heavily on private control over centralised production (cars, oil, roads) and also



promotes economic and political inequality.⁴ These characteristics can be maintained temporarily by smaller cars, production of liquid fuel from coal, and eventually perhaps use of alcohol as fuel. Another likely possibility is reduced access to inexpensive transport following increases in fuel costs — a development hurting mainly the poor.

A change seemingly more threatening to current structures would be widespread use of public transport. However, conventional public transport systems are capital-intensive and require centralised planning and control, as well as still being relatively energy-intensive. It can be argued that a centralised public transport system which provided a mobility similar to the present system would be a more major form of social engineering, reducing the effective choice and control by the 'consumers' of transport. This matter deserves further thought and consideration. But certainly it is possible to have public transport systems which through their rate structures, routing and differing qualities of service, maintain inequality as well as reserving decision-making about the system to the planning experts.

An approach to transport problems which would require drastic changes in present societal structures would be likely to involve a strong reliance on (a) bicycles, (b) vehicles which are simple, slow, resource-efficient, multi-purpose, and capable of being locally produced. (c) redesign of cities to reduce transport needs, and (d) redefinition of work roles (so that much production, education, recreation, etc. could be done in local areas).

Component 4: Collective goods and services, as much as possible produced and managed in local communities. Examples are local production of food in community lots, low-cost local laundries, community movie/TV, and heavy power tools, trucks and boats for use by any community members. In as much as design of the technology were such as to permit easy use, redesign and multiple applications, then the problems of planned obsolescence would be overcome, in addition to those of multiple copies and versions of goods for numerous individuals. It is apparent that such a component of an energy strategy, if widespread enough to involve more than the affluent or disaffected few, would be severely detrimental to the maintenance of current economic and political structures.

Component 5: Less military production and less production of luxuries for the rich. Since the military establishment is an integral part of the current organisation of society, and since economic inequality is an integral

feature of it, this possible component of an energy strategy is likely to be left completely unmentioned by any except those challenging the political and economic organisation of society.

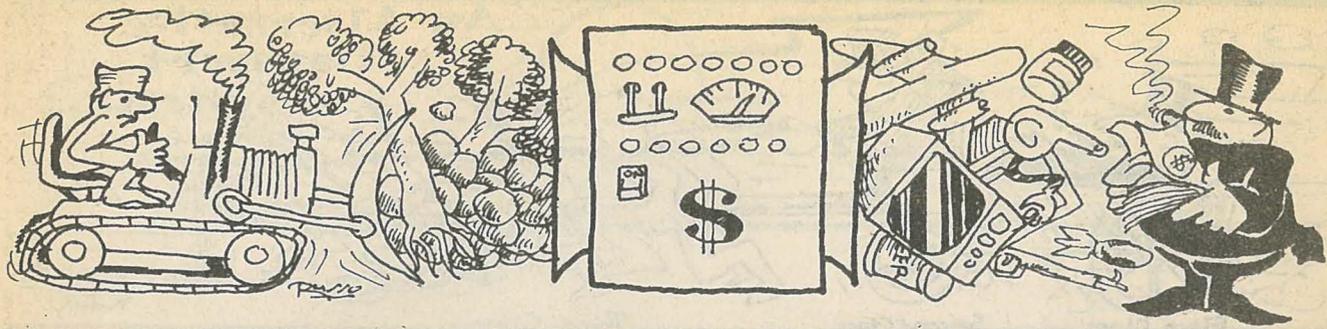
This same sort of analysis could be applied to other components of an energy strategy, from recycling to wind power. What is important is to look at the political and economic implications of energy strategy, not just whether it is hard or soft.

My basic conclusion is that it is possible to have a slow transition to a combination of hard and soft technologies, in which the soft components are introduced in such a way as to maintain private control over production, maintain economic inequality, and maintain lack of local control over the design of society.

The changes necessary to attain any soft energy path, even if they come about, are not going to come about easily. The forces backing and benefiting from hard energy paths are enormous, and they are only likely to give in as it becomes apparent to economic and political leaders that the safer soft energy future is possible without major structural changes in society. It is likely to be the case that, in the eyes of decision-makers, the strongest argument in favour of soft technologies will be their very preservation of the system against collapse resulting from the difficulties of a hard energy future. At the same time, the attention and effort of many social reformers will be directed towards preventing a hard energy future. One consequence of this is likely to be a lack of attention towards the political and economic circumstances in which the soft components are adopted (or rather, an implicit assumption that political and economic structures are to be maintained as much as possible).

It is apparent from Lovins' article that he is concerned with a soft energy future within present societal institutions. He devotes a large amount of space to the values of energy conservation and other technical fixes. When he talks of soft technologies, it is usually in terms of systems for individual households. He looks forward to the economies of mass production of solar-energy components, and to the production of methanol and alcohol as alternative liquid fuels. Fluidised-bed technology is seen as the solution for (conventional) industrial production, and even as useful for individual households.

It is only in passing that Lovins mentions social changes as a way to do more with less energy. Even then he mentions such things as car-pooling, dressing to suit the weather, and recycling, and not such fundamental changes as self-managed local production, collective use



of goods, or reduction of the military establishment.

Not only does Lovins see changes in energy strategies within existing political and economic institutions; he also looks to these institutions to provide the motive force behind a change to a soft energy path. For example, he says that, "properly using the markets we have may be the greatest single step we could take toward a sustainable, humane energy future." His vision for change in society basically involves change in policy from the top. Presumably this is the reason his article first appeared in *Foreign Affairs*, an impeccably establishment journal.

Fitting in with these orientations is Lovins' belief in the sufficiency of rational argument for attaining change in society. (This belief is also manifest in his books.) If change is to come about within existing institutional structures and at the bidding of political and economic elites, then reasoned argument — appealing to the aims and values of those elites — should be all that is necessary. Lovins makes no reference to the massive and worldwide public opposition to some of the aspects of a hard energy future, especially to the epitome of such a future, nuclear power. Such citizen opposition — whether inspired by rising costs, technological breakdowns, environmental impacts, or a sense of powerlessness — can be considered to be a major reason for policy-makers' re-evaluation of energy strategy.

A consequence of Lovins' reliance on rational argument and lack of attention to the political forces behind energy strategies is his claim that the choice between the two types of energy paths is a stark one: "we stand at a crossroads: without decisive action our options will slip away". Certainly this is true to some extent: the institutionalisation of high technologies makes them even harder to challenge. But Lovins' sharp choice is politically unrealistic, as I have argued. With the strong vested interests backing high technologies, it is futile to expect a sudden change in policy, however rational and desirable it may be. Lovins' conclusion that "we shall not have another choice to get there [a soft energy future]" is an example of the doomsday prophecies of middle-class environmentalists.⁵ It encourages a resigned attitude and a blind hope for drastic action from the top, rather than encouraging patient organising at the grass-roots level.

To be fair, Lovins is quite aware of the different sociopolitical impacts of hard and soft energy paths. For example, he comments that no coercion is necessary in a soft path, and that a soft path would be advantageous to the poor and weak. But these advantages of soft energy paths are not central to his argument; Lovins gives most

of his attention to technological and economic factors. One suspects that the social implications are only mentioned because they happen to support his argument. The priority of the technological and economic orientation in Lovins' perspective results in an approach which looks first for changes in technology (for survival reasons) which then lead to social benefits. The trouble with this approach, I have argued, is that soft technologies may be introduced in a way which nullifies many of their social and political benefits. An alternative to Lovins' approach is to consciously adopt certain social and political goals, and then to work for the introduction of particular technologies in desirable social and political circumstances, to help achieve these goals. (As to how this might be done, see Part 3 of this series.)

For those concerned with environmental issues because of a belief in the inadequacy of present institutions, it will be apparent that important changes in political and economic structures will not come about *solely* through the adoption of soft technologies, and certainly not through their adoption resulting from policies initiated by current decision-makers. The value of environmental issues in promoting change in society lies in their links with political and social values, and in their appeal to a broad segment of the population. But unless the political and social aspects of technological change are presented as an integral part of environmental demands, it is likely that our future may be hard and soft: *soft technologies and hard institutions*.

This does not mean that we should reject Lovins. We should be thankful that there is no-one half so dynamic and persuasive arguing for a hard energy future. We should study Lovins' comments about possible energy paths with care, but in linking them with our strategies and tactics be sure to trust to our political and social ideals.

None of this should be grounds for pessimism. To whatever degree a hard energy path is adopted, this will lead to the increasing disillusionment of the populace, for the advantages of soft energy paths (whatever their social and political components) to the bulk of the population are becoming increasingly obvious. This is one reason for the strength of the anti-nuclear movement. On the other hand, the adoption of soft technologies, however distorted to serve inequitable political and economic structures, will still help create the preconditions for an easier transition to a qualitatively different society.

Mark Diesendorf, Bob James, Barry Naughten and Hugh Saddler provided valuable comments on this article.

Footnotes

1. Amory Lovins, "Energy strategy: the road not taken?", *Foreign Affairs*, (October 1976); reprinted in *Not Man Apart 6* (mid-November 1976); also reprinted by Friends of the Earth Australia (1977).
2. David Dickson, *Alternative Technology and the Politics of Technical Change* (London: Fontana, 1974); Stephen A. Marglin, "What do bosses do? The origins and functions of hierarchy in capitalist production", *Review of Radical Political Economics*, 6 (Summer 1974), 60-112.

3. Universal education, the democratic franchise and industrial unionism were similarly introduced only when they had become politically safe. See: Christopher Lasch, *The Agony of the American Left* (London: Andre Deutsch, 1970), ch. 1; Alan Wolfe, *The Seamy Side of Democracy: Repression in America* (New York: David McKay, 1973), ch. 8; Samuel Bowles and Herbert Gintis, *Schooling in Capitalist America* (New York: Basic Books, 1976), part III.
4. Ivan Illich, *Energy and Equity* (London: Calder and Boyars, 1974).
5. Hans-Magnus Enzensberger, "A Critique of Political Ecology", *New Left Review*, no. 84 (March-April 1974), 3-31.

Lovins Replies

Comments by Amory Lovins on a first draft of Amory Lovins: The Line not Taken?, extracted from a letter to its author, Brian Martin.

✿ I didn't say that hard and soft technologies are technically incompatible and can't coexist (rather, that they are logistically competitive and institutionally and culturally incompatible). They will in fact coexist throughout the transitional period, since our present stock is virtually all of hard technologies. Over the next 50 years or so, the hard/soft ratio would decline until we had matched, as nearly as possible, the scale spectrum of end-use, so virtually eliminating the costs and losses of energy distribution. Happily, in the countries I've studied so far (and, so far as I can judge, in Australia) it would be unnecessary to have more hard technologies — for example, big coal-synthetics plants, reactors, or solar satellites — than already exist. Of course one can expect commitments to both hard and soft things while we're changing course, but once we've looked harder at the soft path, I expect we'll see that we can't, and needn't, do everything at once: the elements of a soft path by themselves suffice and are internally consistent.

It's a category mistake to suppose we can have a hard and soft energy *path* both at once (a path isn't the same as a technology). This is because the paths are distinguished only secondarily by choices of hardware, and primarily by their politics. A hard path is one whose polity is dominated by such structural problems as centrism, autarchy, technocracy, and vulnerability. One could in principle have these problems with soft technologies, by deploying them in a centrally managed way — which would be silly and unnecessary but might be done. Thus the use of soft technologies is a necessary but not a sufficient condition for being on a soft path. The political conditions defining a hard and a soft path cannot, by definition, coexist in the same society at the same time.

✿ My analytic assumptions (for example, pure technical fixes on the demand side) do not in general reflect my personal preferences (which you can read between the lines of section X). I used other people's value systems to avoid argument. Readers who consider today's values and institutions to be imperfect are welcome to assume a mixture of technical and social changes, rather than purely technical ones, and will then compute greater energy savings than I did. Since I don't want to impose my values on other people, I'm concerned to develop a type of energy system consistent with pluralism and cultural diversity — one in which committed slurbians could also be happy. Of course, other values

are also legitimate; but it seemed unwise in this article to leave open the possibility that some people might think I'm disguising a manifesto for social and political change behind a screen of energy policy.

✿ I agree that soft energy technologies permit, even promote, but do not necessarily entail, avoidance of the high political costs of a hard path. That depends on how the soft technologies are deployed and used. I do not see a soft path as "a major challenge to the current political and economic structures", since it does not entail increased local control, democratization, decentralization, etc. It permits them, but as I assume and present it, it also permits maintenance of the sociopolitical status quo (for example, I assume no significant changes in lifestyles, settlement patterns, or political structures). Institutions which might first think of the soft path as threatening — such as utilities — can readily be co-opted into the transitional process, since its economic benefits are large enough to be distributed to all the potential actors and give them an ample incentive.

✿ It is not my intention to present a blueprint for solving all our social and political problems. My aim is more modest: to suggest an approach to the energy problem that allows us to avoid some nasty political (and other) problems that would otherwise clobber us. Whether such an approach were part of a broader reform movement is of personal interest to me, and obviously to you, but not part of my *Foreign Affairs* analysis. One step at a time: I want to give a conservative policy audience a message they could not ignore. In effect, by arguing within their own criteria with their own numbers while rejecting their value system, I show their paradigm to be inconsistent. That's enough to start with: I don't have to reform their value system instantly, and if I tried, harder than I did in fact do in section X, they wouldn't read it yet, and *Foreign Affairs* wouldn't have published it. Thus, while I'm generally sympathetic to your reforms 1 to 5, (see pp.18-19) I trust you appreciate why I did not rest my case on them. It messes up people's minds much more to show that their proposed energy policies, on their own data, don't meet their own criteria as well as my policies do, without simultaneously asking them to adopt different criteria.

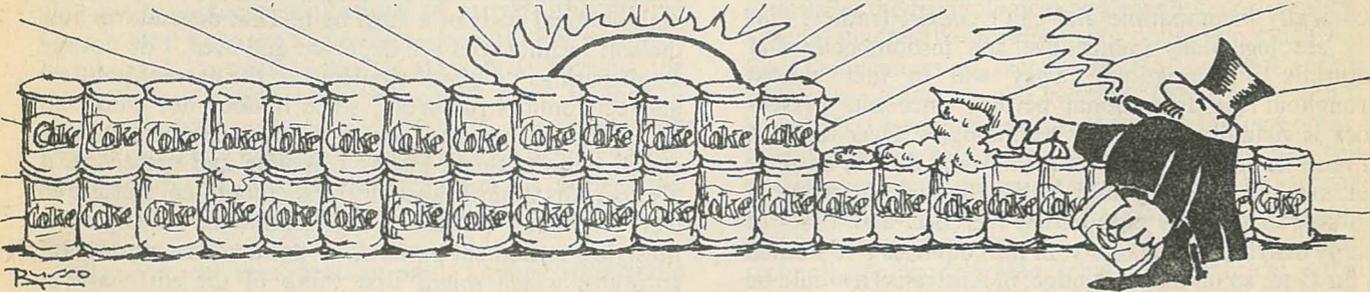
I agree that a slow transition is possible. I don't, however, think it's necessary. Because the sort of technical-fix soft path I describe can be made so compatible with present values and institutions, it can be adopted without much disruption. If you find the political support for your broader reforms later, you will then have an evolving energy system that is compatible with your ideas; if not, we'll still be politically much the way we are now, not in the awful fix inevitable with a hard path.

POLITICS OF ALTERNATIVE ENERGY 2

Queanbeyan Soft Drink Factory

"Solar energy used to produce canned coke at Queanbeyan": A great leap forward in the deployment of solar energy? Or should we even be marketing soft drinks in cans? FOE Canberra take a

close look at this development and reveal the political myopia of simply slotting in solar power in place of fossil fuels in our existing productive system.



In a Queanbeyan soft drink factory, the CSIRO is trying out a heating system using solar energy. Part of the heat used in the manufacturing process, normally produced by burning oil, is being generated through the use of solar collectors.

Surely this is a step forward! The use of solar energy promises to ease the energy crisis. And what's more, solar energy will never run out and is almost totally free of pollution. But let's not be hasty. Let's look first at what the energy is being used for, at who is benefitting from it, and what other alternatives there may be.

In the Queanbeyan soft drink factory, the heat being produced by collection of solar energy is used to heat up the soft drink cans after they have been filled and sealed. The reason is this: In a previous stage of the process, the cans are cooled; if the cans were allowed to heat up naturally, water would condense on them and soften the cardboard cartons in which they are packed immediately afterwards. In short, the cans are heated so that water will not condense on them.

Looking at things this way, it is obvious that there is another way of getting around the problem: allow the cans to dry off before packing them in the cardboard cartons. This would mean that no added energy would be needed, neither solar energy nor back-up heat from oil.

Let's look a bit closer at the soft drink factory. One reason that manufacturing soft drinks requires so much energy is that the soft drink cans are made of aluminium, a metal whose production requires large amounts of energy. Steel cans require much less energy to produce. But if energy is a problem, why not use bottles, which can be reused? Instead of using energy to produce a can or bottle for every new drink, reusing the materials would greatly cut down on energy requirements.

Why is it that manufacturers don't look at ways to save energy by changing production methods? Partly it is

because energy is cheaper than it should be. Tax money is used in various ways for the development of energy resources, from subsidies for oil exploration, construction of hydro electric schemes, construction of freeways, to solar research. But even without these subsidies, energy is undervalued in the market because non-renewable resources such as oil are treated as if they were not going to run out — capital is treated like income. Finally, energy is undervalued on the market because the side effects of its use — pollution in particular — are not taken into account.

So the Queanbeyan soft drink manufacturers are not really so much to blame for their unnecessary degree of energy use. The company, after all, is just doing what is most economical, and hence best, for *itself*. What is a problem is government policies which subsidise excessive energy use, and the economic system which treats energy as a commodity and encourages looking for short-term gains and ignoring long-term social effects.

Let's look once again at the manufacture of soft drinks. Why should they be manufactured in a central place (a factory), therefore requiring all the trouble of packaging, distributing, selling, and disposing of the containers? Why not just distribute the soft drink formula (which is mostly sugar anyway) so that people could make their own soft drinks, like they make coffee and tea now. This would eliminate the need for large amounts of energy: the energy used to mine bauxite and produce aluminium, the energy used to build the factory, and the energy used to distribute and sell the drinks.

This is all very well, but this idea raises a lot of questions. What about the profit motive? And what about employment? — what about all the miners, factory workers, sales people, garbage workers, and executives whose incomes depend on soft drink manufacturing? — what about their jobs?

Soft drinks have no nutritional value. In addition, the caffeine in many of them makes them addictive, their sugar causes tooth decay, and artificial flavourings and colourings may cause hyperactivity in children. How did the 'need' for soft drinks come about anyway?



At this stage it is easy to see that resource and environmental problems are more than just technical issues. There are lots of ways to cut energy use. But some of these ways conflict with present social, political and economic practices. Rather than rejecting these alternatives out of hand, it is valuable to study them in more detail. If they are beneficial to people in other ways as well as just improving the environment of a few, then it may be worth trying to change some established practices.

Employment

From the point of view of employment, distributing the soft drink formula would seem at first sight to be a bad thing. Producing the formula for home use would not take much effort; it might even be possible for individuals to make it on their own for supply to the local community. All this means less paid employment in the conventional sense.

But first look at the situation from the point of view of the community as a whole. First the community receives the same material goods — soft drinks — at a reduced cost. Second, the total amount of labour required to produce these goods is much less. And the labour that is made unnecessary — the work that goes into mining, the factory assembly line, distribution and sales, and waste disposal — is for the most part not greatly rewarding.

In theory, the material and human resources freed by distributing the soft-drink formula could be used in a variety of beneficial ways — such as building homes, doing skilled craft work, helping the young to learn, or simply growing vegetables — or could contribute to a reduced work load for everybody. Ideally then, it should be possible to get rid of a great deal of unnecessary and unrewarding labour, and replace it with valuable and rewarding labour, or leisure.

It is precisely because changing things in our society in this way is extremely difficult, that society is far from ideal. Without changing society in other ways, the likely result of distributing the soft drink formula would be greater unemployment, and no more effort at all devoted to socially valuable activities.

This then is the problem: there are numerous ways (see part 3 of this series) in which society could be changed which would reduce waste and unnecessary labour, and provide the opportunity for a more satisfying life. But the structures of society — social customs, and the unequal concentration of political and economic power — resist change that adversely affects vested interest. There are no evil people behind this. The problem is with structures which although they satisfy people's needs (to some extent) do this in a way that selectively benefits an elite few, rather than in a way that serves the interests of the community as a whole.

POLITICS OF ALTERNATIVE ENERGY 3

What sort of society is possible?

How can we move towards a society based on soft-energy technologies and guaranteeing greater social justice and ability of individuals to decide and control their own lives? Fusing the arguments ad-

vanced in the previous two articles of this trilogy, FOE Canberra here sketch a 'people's energy strategy', and suggest collective action to implement it.

How would energy be used in a society in which activities were organised around satisfying people's needs without the present irrationalities in production, transport or bureaucracy? Here only a few suggestions are made; it is important that the people who will be creating and living in a society make the decisions about how that society is structured.

To begin with a few basic desirable features:

- guaranteed provision of material needs (food, clothing, shelter);
- opportunities for all to engage in satisfying labour;
- peace, justice, equality, and a sense of community;
- opportunities for learning, artistic and spiritual activities;
- environmentally conscious lifestyles.

This sounds a tall order! What is it likely to mean?

One change would be that production facilities would no longer be owned and controlled by a few. Instead, management would be by the workers and the community. The control of other people's labour would not be permitted.

Another change would be a great deal of decentralisation of work. Instead of goods being produced centrally, designs would be encouraged which enabled people to build and repair their own goods.

HOW TO REDUCE ENERGY AND RESOURCE USE AND AT THE SAME TIME PRODUCE SOCIAL BENEFITS

1. Reduce the military establishment. In its place, institute a programme of civilian defence (resistance to enemies by coordinated economic and political action).
2. Get rid of planned obsolescence (goods designed to break down just after the warranty period, and continual style changes), and produce fewer luxuries for the rich.
3. Make it much more difficult and expensive to build freeways and produce and drive cars. Develop alternative means of transport: public rail and bus systems, an extensive system of bicycle paths plus diverse types of bicycles, and special subsidised services (such as taxis) for the aged and infirm.
4. Establish more community goods and facilities to reduce the demand for private goods: low-cost local laundries, community movie/TV, and heavy power tools, trucks, and boats for use by any community members.

Another change would be a greater reliance on public facilities: public transport, washers, water heaters, and garden plots for a group of households.

There would also be less specialisation in labour tasks. Instead of being forced to do lifting or typing all day to earn a living, people would be able (if they wished) to engage in a variety of tasks.

What would it be like?

But these are only the structural changes. How would such a different society *feel* like to live in?

First, people's lives would be more *secure*.

Today, most of us are at the mercy of events. We cannot plan ahead because of inflation or recession, and the threat of unemployment. Our lives are disrupted by breakdowns due to accidents or strikes. We live in fear from the threat of crime and nuclear war.

In a society in which production was decentralised and more under the control of the people, much of this would change. Production of goods would be to satisfy needs rather than achieve profits, so that continuity of production and employment would be guaranteed. With bicycles and local production of food, energy and goods, people would be less at the mercy of multinationals, oil cartels, and strikes. And with more emphasis on community goods and activities, materialism would be reduced and with it crime.

5. Make it possible for much work to be done when and where the worker desires. Much office work, for example, requires only a desk and a phone, and so could be done at home or at local collectives. Much factory labour could be replaced by individual or small-group craft production, with no loss of efficiency, with more enjoyment and pride of accomplishment for the workers, and with no need for bosses.

6. Design houses and other buildings with an eye for collecting the sun's heat, for insulation, and for collective efficiency. Solar hot water heaters with a common reservoir, for a small group of houses, can overcome the cold cloudy periods. Diesel generators for a sizeable community or an industrial installation can produce electricity and waste heat in an efficient combined operation.

7. Encourage local production of food in individual or community lots. This can be a satisfying part-time activity replacing much low-paid repetitive agricultural labour. Composting and use of a diversity of crops also avoids some of the need for energy intensive fertiliser and the problems of pesticides.

A second improvement would be that people would have more *control* over their lives.

With decentralisation and local production, it would be natural for decisions about work priorities, community development, and education to be made by the local communities concerned. But local control is not only desirable because it serves the community's interest: it is also something that makes life vital and stimulating. In fact, one way of deciding how society should be structured is to try to maximise each person's direct influence over the important decisions that affect her or his life.

In such a society, no one would be forced to use public facilities or adopt a number of work roles. What would be different is the structures which make it easy for people to do some things and harder to do others. Today libraries provide an alternative to private ownership of books, and public hospitals provide an alternative to private ownership of vaccines. If low-cost or free community goods and services were provided in other areas (from transport to movies) and private ownership were more expensive, most people would find it natural to use the public goods. There is no question of forcing people to change their needs or preferences. But what can change is the institutions through which people express those needs and preferences.

How to go about making the change?

Fundamental change in society may be a necessity, but it is vital to work for it in the right way, otherwise the wrong change may result. The strategies for achieving change must reflect the sort of society we wish to live in — the means must reflect the ends. The following principles provide some possible guidelines, which then may be applied to particular cases (see box).

1. *The movement must be democratic.* For an elite to take power in the name of the people is a hoax; all that is achieved is the replacement of one set of rulers by another.

In the present society, most important decisions are made by a few select people, in secret. The populace is not encouraged to get involved in decision-making, or to question basic institutions. Public communication is monopolised by the media and is one-way.

A democratic movement for change in society must be different from this; it must be open and participatory. To a protest movement, being democratic means: developing means for collective decision-making and rotation of responsibility; encouraging participation by all interested people; and making all policies and action open and without secrecy.

2. *The movement must attack structures, not people.* The problems in society are due to social, political, and economic structures that lead to poverty, injustice, racism, and militarism. Almost all people mean well in what they do. It is no use attacking individuals or replacing them without altering the structures which condition their actions. This means that protest movements should work on issues and alternatives that have a chance of changing the normal ways of decision-making. Instead of lobbying for preferred policy decisions, it means setting up new democratic organisations to decide on or implement policy themselves.

3. *The movement must be resolutely non-violent.* Violence as a means for attaining social change has

several severe flaws: it often causes suffering; it abdicates moral superiority and alienates potential supporters; it requires secrecy and hence leads to undemocratic decision-making; and if successful, it tends to lead towards a violent and authoritarian new ruling elite.

Non-violent action as a technique avoids all these problems. But non-violent action is not passive. It includes such things as exposure of current institutions, strikes, work-ins, boycotts of goods or elections, sit-ins, and setting up of alternative institutions.

4. *The movement must be positive.* Rather than just opposing present policies, alternatives must be explained, promoted and carried out. This is not easy, since power over planning, employment and production is in the hands of those in charge of current institutions.

Don't get discouraged

Changing society seems to be an immense and impossible task. It is — if you try to do it all by yourself.

The idea that nothing can be done — fatalism — is a useful one to those who wish to resist progressive social change. Beneficial change will not occur just through the actions of a few individuals, but through the combined and collective effort of many people across the world.

To make a positive contribution, one need only do such things as think about alternative structures and talk to friends about them; help in your workplace of community group on issues which challenge current assumptions and institutions; and be ready to join or support community protests when they arise.

Parts 2 and 3 of this trilogy reflect some of the ideas of Friends of the Earth — Canberra; it is not meant to be dogmatic, but to stimulate thought and discussion.

For more information contact

Friends of the Earth at Block E, Childers Street Bldgs, P.O. Box 1875, Canberra City, ACT 2601. Tel. 47 3064.

HOW TO HELP TOWARDS CHANGING UNNECESSARY AND OPPRESSIVE STRUCTURES IN SOCIETY

1. Don't go along with nationalistic and militaristic thinking. Question the need for high technology 'defence' in a world where total war is total disaster. Study and promote plans for changing over to civilian defence. Organise (within the military) to demand a more people-controlled system of defence.
2. Organise (in factories) for better working conditions, and for production of more socially relevant goods. Demand technologies which people can easily produce, use, and repair. Don't go along with the glorification of material possessions.
3. Help groups promoting bicycles and public transport — even if you cannot afford not to drive yourself. Support campaigns (such as opposition to uranium mining) which challenge powerful vested interests, and which lead to questioning of the assumptions underlying the present organisation of society.
4. Organise, join or support groups that orient their activities to the people in them (community planning, deprofessionalised education and health services, local production) rather than lobbying central bureaucracies.
5. Reject parties or groups which claim to want power in the name of the people. Measure success by local involvement and not by being consulted or represented by remote leaders or experts.

The Clamshell Alliance

The Story of the Seabrook Occupations

How can violence at anti-uranium demonstrations be avoided? How can the media's attention be kept on the issue behind the action and the positive aspects of the protest? These questions are going to be of vital importance over the coming months in the Australian anti-nuclear campaign, as we head towards a blunt confrontation between environmentalists and unionists, and government and corporate forces, over whether uranium development should proceed.

Faced with a similar situation, the US anti-nuclear movement has come up with a novel method of non-violent protest, involving education in nonviolence, lengthy prior discussion of the purpose of any direct action, and role-playing by demonstrators of all the 'parts' involved — protestors, police, company personnel, and even agitators. The result: an immensely successful nonviolent occupation of a reactor site at Seabrook, New Hampshire, which drew strong support from the local population. Observers say the action was more like a ballet than a political protest.

Acting without violence, the carefully trained occupiers were on the site some twenty-four hours

before arrests began. By dawn of May 2, police had removed 1,414 nuclear opponents. But there was an unexpected complication: During booking procedures, the occupiers were required to post bail ranging from \$100 to \$500. Most had expected to be released on personal recognizance, and refused to pay. A twelve-day face-off focused even more attention on the occupation: Detention of the protesters was costing the state of New Hampshire about \$50,000 a day, and Governor Meldrim Thomson issued a nationwide appeal for financial help. Finally, on Friday, May 13, the remaining 541 occupiers were freed on personal recognizance, ending one of the most controversial mass arrests in US history.

The Seabrook occupation drew worldwide attention and support, and has been hailed as a signal of the rebirth of political activism in America. HARVEY WASSERMAN has sent CHAIN REACTION the following report. As well as to everyone in the anti-nuclear movement here, we highly recommend the article to all MPs and police forces throughout the country.

HARVEY WASSERMAN

Seabrook, New Hampshire

On July 9, 1976, the Public Service Company of New Hampshire began levelling the town dump of Seabrook to prepare the site for construction of a nuclear power plant. It wasn't the company's first mistake, but it was definitely the biggest.

The people of Seabrook had already voted against the nuclear project, and the foundations had been laid for a locally based anti-nuclear campaign. The Public Service Company bulldozers were a declaration of war against thousands of New England seacoast residents who had strong apprehensions about the plant, the thermal pollution it would spew into the Atlantic, and the hazards of radiation leakage, catastrophic accident, and disposal of nuclear wastes.

Within days, an umbrella coalition — the Clamshell Alliance — began planning a series of actions at the Seabrook site that would usher in a new age of political activism in the 1970s and pose a formidable threat to the electric industry's program of nuclear construction.

More than a dozen grass-roots anti-nuclear groups had been in operation around New England by the time construction at Seabrook began. Indeed, with seven active reactors in the region, one under construction, and eight more proposed, the anti-nuclear movement here had already become something of a subculture.

Activists in southern Vermont were focusing on the notoriously inefficient and dangerous Yankee plant at Vernon. Strong resistance had also been building for more than three years against twin reactors planned for the town of Montague in western Massachusetts. In 1974, the Pioneer Valley anti-nuclear forces had won 47.5 per cent of the vote in a referendum against the Montague plant, and had carried 33 per cent in favor of shutting down the Vermont Yankee plant as well as a smaller reactor at Rowe, Massachusetts. In the same balloting, Wendell, Massachusetts, became the first town in America to vote to dismantle active commercial nuclear power plants.

With its long winters and scarce fossil reserves, New



England has long been the region where the nuclear industry felt it could make its best case for atomic energy. But the resistance has been fiercest here, partly because of regional traditions of political activism and partly because the anti-nuclear forces decided early in the game to base their strategy on community organizing. On Washington's birthday in 1974, Sam Lovejoy struck a blow against the Montague plant by toppling a 500-foot nuclear-related weather tower at the proposed site. That action — and the documentary film that came out of it — became our call to arms. Our assumption was that the nuclear industry could be beaten door-to-door, and our path led straight to Seabrook.

Seabrook represented the first new nuclear construction in New England in three years. With six reactors on the drawing boards and at least one other (Pilgrim II at Plymouth) nearing the construction phase, it was clearly time to move. Through several weeks of meetings in the summer of 1976, representatives of New England grassroots organizations hammered out a new strategy.

The Clamshell Alliance would employ mass civil disobedience. The actions, however, would be occupations, not demonstrations. Following the model set by nuclear opponents at Wyhl, West Germany, we opted for a long-range program that would aim at taking the Seabrook site and holding it.

The tactic of mass occupation, although untried in the United States, seemed to be our last resort. Nobody was winning any legal interventions, and there was no prospect of governmental action. We were not merely

protesting nuclear construction — we were trying to stop it. Our actions would not be for show; if we failed, it would be because we lacked numbers, not intent, and next time we would be back with more people.

As an umbrella coalition, the Clamshell Alliance would help co-ordinate and focus the energies of the grass-roots groups without imposing a rigid structure. All Clamshell meetings would operate on consensus rather than majority vote. There would be task-oriented committees, but no officers. The Alliance office would be a switchboard, resource, and convening centre, but the decision making of the struggle would remain firmly in the hands of the local residents.

At the same time, all Clamshell actions would be organized along nonviolent precepts. Specially invited to the formative meetings were Elizabeth Boardman and Suki Rice, Boston-area members of the American Friends Service Committee. For many months, nuclear opponents had tried to persuade the organization to adopt the issue, but without success. Now the movement came to the Quakers for instruction in the tactics of peaceful resistance.

With the help of Boardman and Rice, the Alliance adopted a plan for training in the tactics of nonviolence. In "affinity groups" of eight to twenty people, the occupiers were fully instructed in the legal ramifications of what they were about to do. There was discussion of the nuclear issue in general and of the Seabrook situation in particular. The groups reviewed the plan of action and related it to historic applications of the nonviolent techni-



que. Finally, they "role played" the exercise they were about to undertake.

This last element proved immensely helpful. The prospective occupiers acted out various parts in the coming drama — in turn playing police, media, medics, support people, and occupiers. The game allowed us to see the coming action from every perspective. It also added a dimension many of us had missed during the antiwar demonstrations of the 1960s and early 1970s: putting ourselves in the position of the police and forcing ourselves to assess their attitudes.

Each group had its medical and media people and at least one person who would avoid arrest and serve as outside liaison through protracted occupations or incarcerations. (We hope that the affinity groups will continue to serve as organizing bodies in the local communities, but that remains to be seen.)

The nonviolence training was evident even in the first occupation on August 1, 1976. Eighteen occupiers — all from New Hampshire — walked along a mile of railroad track to occupy the reactor construction site.

On August 22, 1976, more than 1,500 Clamshell members rallied near the site and 180, representing all six New England states, occupied the Public Service Company property. This time the training and affinity structure were crucially important — not only in keeping our community together, but in reducing tensions with the state police. We told the police everything we planned to do and gave them no reason to mistrust our word.

Because of the tight group structure, any disrupters on our side could be quickly identified and isolated. Later we learned that the state police had also done role-play training. Everyone had a reasonably good idea of what was about to happen. There was an air of good feeling and self-assurance among both the police and occupiers that made the event seem more like a ballet than a traditional political confrontation.

The lack of rancor made it easier to keep the focus on the issue. August 22 became our peaceful "shot heard 'round the world" and it made New England aware of nuclear power as nothing else — short of a melt-down or a still larger occupation — could have.

Riding high on the tide of our first major success, the Clamshell scheduled a third occupation for October 23. But by mid-September we had serious second thoughts about Clamshell's real strength and its mass appeal. There would be more to building a movement than merely getting busted at Seabrook.

The scheduled occupation was converted into an alternative energy fair and mass bike ride that drew 3,000 people to Hampton Beach State Park on a cold, windy October weekend. We used the fair to highlight our commitment to natural energy. We also announced a new occupation date — April 30, 1977 — and settled in for a winter of serious organizing.

Through the fall the Alliance had functioned as an informal meeting to coordinate the rallies and actions. Our problems had been simple logistics — where to stage speeches, how to train occupiers, how to publicize it all, and, of course, how to make the necessary support arrangements.

By October, the realities of building a durable movement had become more clear. We would have to strengthen the local groups, solidify our community outreach programs, and start a campaign to reach working people.

Our main instrument was the committee system, which performed the nitty-gritty tasks and absorbed new people who were willing to work. A resource committee became responsible for producing and distributing literature, speakers, films, and general information. A farm-labor committee worked on getting a foothold in the union and agricultural communities, and produced fliers on the jobs issue as well as a leaflet to distribute to the National Guard in anticipation of a larger action. Legal, media, and finance committees went to work. Recently we have added a concert committee and an alternative energy committee to promote our growing emphasis on conservation and solar power. New committees are added, and old ones dissolved, as our needs change.

No important decision can be made without going back to the locals for consensus; any major decision thus takes at least two weeks — usually more — and can require hours of discussion involving any Clamshell member willing to participate. Two major Clamwide congresses have also been convened to give final solidarity to upcoming actions.

If the group consensus system seems cumbersome and slow, it has also proved to be a key factor in the organization's high morale. The Alliance has continually moved toward decentralization, and dialogue is constant. Anyone can take part in our meetings — a perpetual

Clamshell phenomenon aptly described by one National Guardsman as "a tribal ritual."

As the Clamshell members dispersed for the winter, the grass-roots campaign on the New Hampshire seacoast gained momentum. The foundations had been laid in the early 1970s, when Aristotle Onassis had tried to build a huge oil refinery at Durham. The town had voted no, and despite the best efforts of Governor Meldrim Thomson, the plant had been defeated. New Hampshire don't like outsiders forcing unwanted projects down their throats, and a nuclear power plant is no exception.

As construction of the nuclear plant became more imminent, some of the organizations that had fought Onassis shifted to the nuclear issue. The company's arrogance on some local matters helped to move the people of Seabrook into the opposition. Through the winter of 1976-77, nuclear opponents worked in surrounding towns with meetings, slide shows, and leaflets aimed at demonstrating that atomic reactors would do nothing for the clamming, fishing, and tourism on which the seacoast residents depend for their livelihood.

As work proceeded at the site, it also became clear that most of the labor force was being imported from out of state, giving the lie to the company's promise that the project would produce local jobs. The project cost of the plant soared, and seacoast residents began to doubt that the reactors would lower their electric rates. In fact, when the Public Service Company asked for a series of rate increases, the opposite seemed to be the case.

As the Alliance began gearing up for its third occupation, local supporters played an essential role. Of all the problems leading up to the action, none was as difficult as finding staging areas for the large numbers of occupiers. In most cases, people would have to camp the night before the occupation. The people of the seacoast fear the plant and do not want it built. The Alliance got its staging areas, a barnload of donated food, and, on the day of the occupation, a host of cheering local residents who waved anti-nuclear signs along with American flags to usher the occupiers onto the site.

But as April 30 approached, there simply weren't enough experienced group instructors around, so a training committee was set up to prepare around thirty more. The program soon expanded to include long sessions of free conversation on people's feelings and fears about the coming action, as well as assessments of the affinity group structure and what people expected of it. Some trainers began injecting a "provocateur" into the role play whose identity was known only to them.

The sessions became so attractive that many people began attending them without actually intending to occupy. Suki Rice estimates that more than 3,000 people were trained, and slightly more than 2,000 showed up to occupy.

Compared to our own basic logistic problems, the external resistance proved to be relatively minor. Just before August 22, the Public Service Company had obtained a blanket injunction which was later used to level contempt charges against ten of the occupiers. As the April 30 action approached, the injunction was still in effect.

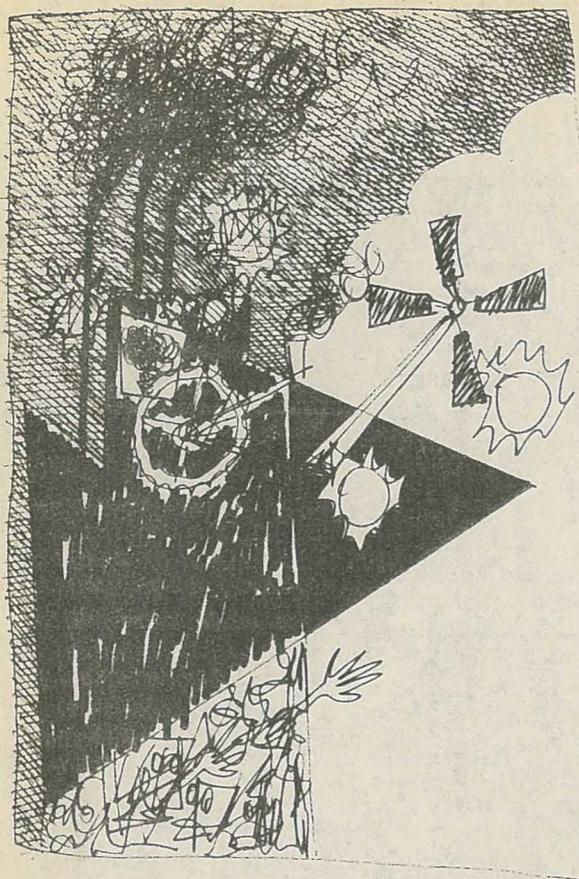
Meanwhile, the *Manchester Union-Leader*, William



Loeb's powerful right-wing newspaper, spent the week predicting violence and bloodshed. And Governor Thomson charged that the Clamshell was a front for "communists" and "terrorists". But we reiterated our commitment to peace and pushed ahead with our plans. By April 29, both Governor Thomson and the *Union-Leader* had muted their tones. At the same time, a court challenge to the injunction resulted in limiting its effect to a small section at the site where work was actually in progress, where equipment was stored, and where we had not intended to go anyway.

This lifting of the restrictions was not strictly magic. Thomson had indeed wanted us kept off the site, but Colonel Paul Doyon, chief of the New Hampshire state police, had other ideas. He had handled the August 22 arrests, was convinced of our nonviolent intent, and apparently decided it would be easier and safer to allow us onto the site and arrest us there, rather than risk chaos on the approach route and in the surrounding area.

On Saturday, April 30, an eerie calm prevailed as more than 2000 people marched onto the nuclear site without a trace of resistance. Police from five states were on hand, but they went a long way toward facilitating the march and making sure no one got hurt. Once again there was an unusual sense of community between occupiers and police, and once again it made it possible for us to keep the spotlight on the *reasons* for our action. It also vastly strengthened the Clamshell consensus on the importance of nonviolence.



Michael Vale

For many Alliance members, nonviolence is *Sine qua non*, a deeply held religious commitment inseparable from their specific opposition to nuclear power.

But as a tactic, peaceful resistance at Seabrook has also raised some important questions about traditional political behavior. So far, the method has disarmed our opponents and brought out the best in ourselves. The nonviolent tone has lessened tensions at meetings, provided an air of calm throughout the organizing procedures, and made it possible to achieve trust among several thousand diverse people. It has also forced several hundred armed police and a violence-prone government in an extremely conservative state to learn some novel lessons in human nature.

With the help of nonviolence, we have witnessed the rise of a strong grass-roots opposition in one of America's most conservative areas. In this growing struggle to stop nuclear reactors, we have found a coherence and a solidarity that have been missing from this country for too many years.

The atomic energy issue may, in fact, be the one to bring us all together. At its core, the nuclear issue is a confrontation between corporate, technocratic domination and decentralized, community independence. The choice is closely linked to a broad spectrum of issues — to unemployment and high electric rates, to exploitation of Third World people and resources, to the plagues of nuclear armaments, environmental chaos, and our soaring cancer rates.

The main obstacle now facing the anti-nuclear movement is the lack of a solid working-class base. The Clamshell's chief antagonists have been the regional construction trade councils — union leaders who promote the idea that nuclear power means jobs, both in short-term construction and in the long run, as our only "real" energy source.

The anti-nuclear movement has succeeded in building broad coalitions in locales scheduled to serve as reactor sites. But it has barely begun to move on the ties between big business and union leaders that have joined to protect polluting industries.

Meanwhile, the Carter Administration has approved the Seabrook cooling system and has given the green light to at least one other plant — at the Indiana Dunes — previously blocked by the Ford Administration. President Carter is in the process of appointing two staunch industry proponents to the Nuclear Regulatory Commission. The President's energy adviser, James Schlesinger, is discussing the prospect of building 300 to 500 reactors — six to ten per state. In sum, Carter's campaign pledge to make atomic power a "last resort" seems to have been forgotten.

The Clamshell Alliance will probably stage another occupation at the Seabrook site this fall or next spring. The New England movement is being joined by sibling Alliances all over America — fourteen at last count. One of them, the Abalone Alliance, plans to try to occupy the Diablo Canyon plant at San Luis Obispo, California, on August 7. In the Pacific Northwest, the Trojan Decommissioning Alliance plans to occupy the nation's largest operating nuclear plant, forty miles from Portland, on August 6. The Long Island Safe Energy Coalition will demonstrate at Jamesport on September 17. By this fall we can expect to see the makings of a full-scale national movement, with counterparts all over the world. And we may also have the makings of the human formula we need to move this planet deep into the age of solar energy, where it belongs.

This is a slightly shortened version of an article published in the US magazine, The Progressive, September 1977.



"There's No Future In F.O.E."

This is the first article in a series which will critically probe FOE philosophy and strategy. Its author, PETER HAYES, was one of the founder members of FOE Australia in 1974. He returned home earlier this year after working during 1975/76 at the Environment Liaison Centre, Nairobi, with the United Nations

Environment Program.

All State FOE groups in Australia have been asked to send in to CR their views on what FOE is, where it is going. Some replies have already been received and will be published in the next issue. We hope other groups, and any friend of the earth interested, will also send in contributions.

Earthfacts

The burden of grief carried on this planet is intolerable. Each day, 25 000 human beings die of water-borne disease. Each year, 25 000 whales are cruelly killed for catfood and replaceable oil. Each day, about \$700 million is spent on military equipment. 30 000 megatons (million tons of TNT equivalent) of atomic weapons — about 3 million times the bomb that vapourized Hiroshima — are primed for immediate use. Such earthfacts are not easy to grasp, being too vast, abstract or distant.

It seems to me that they are the result of two positions to which Friends of the Earth are fundamentally opposed. The first is that if something is possible we should do it — an extension of the Baconian notion that we should effect "all things possible". The second is a willingness to take and to inflict incredible risks, replacing a healthy respect for nature with a breathtaking human arrogance.

For we do not want or need to do everything that is possible. We do not know everything that must be known to justify the risks that are being taken. This absolute knowledge is unobtainable in principle. A wise person said: "No problem has a single cause. No problem has a sole solution. No partial solutions will be admitted by nature".

Almost all the Friends of the Earth groups that I have visited work to stop the atomic and whaling industries. Why on earth are these the common factors? How do they fit into the planetary scene unfolding in the late twentieth century? The answer is that these two issues exemplify the basics to which we are

*"Become one with the knot
itself
til it dissolves away.
— sweep the garden.
— any size."
— wise person*

opposed: the infliction of risk and the loss of respect.

Overdevelopment and Underdevelopment

Overdevelopment constructs atomic weapons and results in underdevelopment. Atomic power is the linchpin of the social machine which generates overdevelopment and underdevelopment. Overdevelopment is grounded in the appropriation of human needs by those who control the market. It is the ever-increasing centralisation of the transformation of raw materials drawn from the environment. The result is pollution from the wastes, noise from the application of energy to machinery, and the loss of a benign environment.

Underdevelopment is the neglect of human needs by those who control the market. This exploitation has left a billion people beset by poverty — dirt, disease and malnutrition.

The overdeveloped patterns of investment in production and conspicuous consumption (military, moonshots, missiles, monoliths and motor cars) are linked to underdevelopment. Both frustrate the development potential of people and their capacity to care for each other and the environment.

International trade in capital goods and raw materials (such as uranium) sustains the equation.

We work to halt the atomic industry and thereby to reduce the

most immediate hazard to life and the environment. An atomic cataclysm would snap the twig of human civilization which has been bent in many other ways into a grotesque and unrecognisable form.

The Struggle against Uranium

Let's look a little closer at how atomic power contributes to underdevelopment and how the pro-uranium forces are fighting back. Now that uranium has become a political issue, each political grouping is seeking information in order to rationalise a position on uranium which best accords with the remainder of that group's position. The uranium issue is now determined primarily by pre-existing political alignments and in accordance with 'fundamental' political positions rather than by consideration of uranium itself. The issue is therefore being defused. This has given rise to pro-uranium rhetorical arguments such as Japan's 'need' or that of the starving 'third-world' (funny we never heard of the Third World before from miners!) for Australian uranium. As *Chain Reaction* has disposed of the Japan myth before (CR Vol. 3 No. 1, 1977), let's look at the reality of the *social distribution of energy use* in third-world countries with atomic power plans.

Thailand is a country with a dense village settlement pattern in the rural areas and with one massive city, Bangkok. Of the total population of 42 391 446 people, 12.8% (5 417 000) live in the urban areas and 87.2% (36 974 000) live in the rural areas (which are taken to include other cities and towns outside Bangkok, in addition to the strictly rural areas).

In Thailand, 70% of the commercial energy is used in the urban areas (with 12.8% of the people) and 30% in the rural areas (with 87.2% of the people). The inequality in the social distribution of energy use is even worse for electricity. The table shows the urban-rural breakdown for electricity consumption by end-use.

In India, villages of about 500 people comprise over half of the country's population and only 11% of such villages are electrified. In a typical village of 100 families (500 people), usually only about 15 families (the rich ones) can afford to connect up for household use. The rest are too poor. As the rich control the land, the electricity used in irrigation and for agricultural processing strengthens their social position.

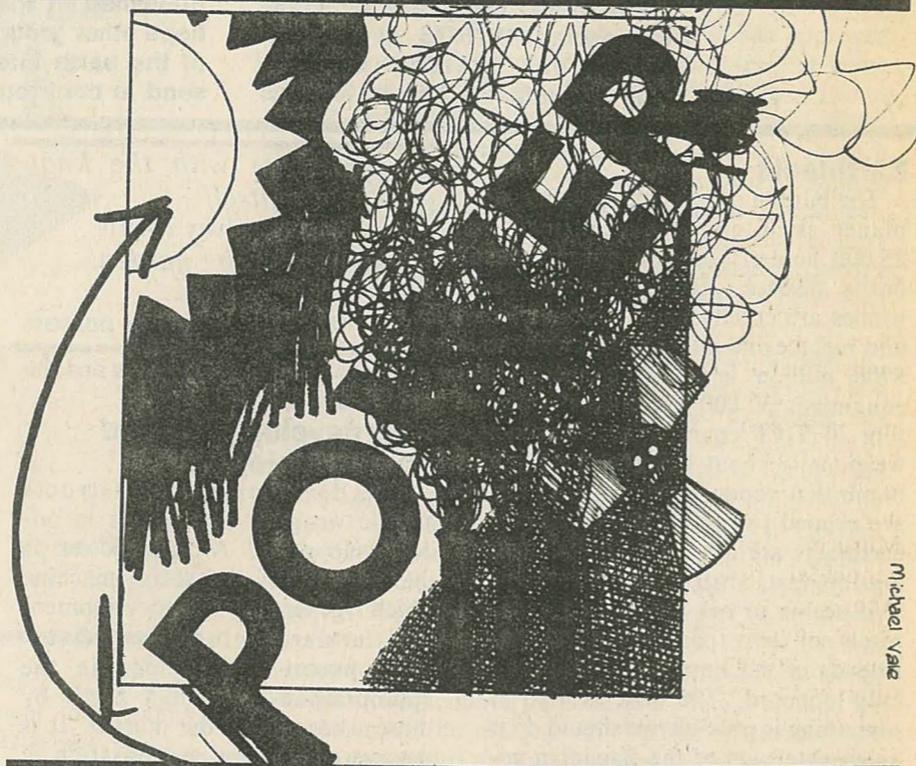
The landless poor, on the other hand, rely on charcoal, wood and dung (the 'non-commercial' fuels). They require much labour-time to collect. The additional labour-time required to collect water and for wage-labour leaves a family with no option but to find the labour within the family — and thus a family must have at least 4 children in order to survive. (The total labour time required to maintain a landless labourer in India is 18-22 hours per day — and the people are often sick with dysentery etc.). The burning of the dung results in depletion of soil nutrients such as nitrogen. The burning of wood results in deforestation, soil erosion, flooding and siltation of dams. The poor in India require a revolution in land-tenure and use, not electricity from centralised facilities such as atomic power which *increases* inequality and worsens environmental damage. (Figures kindly supplied by Professor Amulya Reddy, Indian Institute of Science, Bangalore, India).

The reason that we are seeing such a resistance to the anti-uranium movement and the emergence of spurious pro-uranium arguments is because we are making transparent the real power structures. We are engaging people in concrete analysis and authentic acts of consciousness about their own situation. This is forcing the state to use ever-more coercive measures to ensure continued compliance with the desires of international capital.

For uranium is about who controls

Table 1 Energy Use in Thailand, 1975. From this table it can be seen that agriculture accounts for only seven ten thousandths of the electricity consumption. (Figures kindly supplied by the National Energy Administration, Thailand).

End-use	% of electricity used by sector	Urban	Rural
Industrial	64.15%	68.13%	31.87%
Commercial	14.66%	65.81%	34.19%
Domestic	19.95%	57.15%	42.85%
Street Lighting	0.62%	70.24%	29.76%
Agriculture	0.07%	—	100.00%
Off-peak sales	0.54%	100.00%	—



Michael Vale

and determines the exploitation of Australia. Lang Hancock's anxiety to export *everything now* is a childish inability to delay gratification (aside from being selfish and obscene). Let's ask ourselves: what are the principles which would underly an ecologically sound, humane and *sustainable* export sector? Wouldn't sustainability imply a radical reduction in the rate of extraction of high-grade mineral ores, and a reorientation of the surplus gained from the export of non-renewable minerals away from repatriation of profits overseas or investment in current Australian urban manufacturing for wasteful tall buildings, cars, freeways, etc?

Stopping the Whale Slaughter

We work to stop the whale slaughter to reintroduce respect for nature. Whales are social mammals

whose only cupidity is trust of human beings who kill them. The social structure of the whale has accommodated complexity and conflict without spilling over into violence. In the human transition to a sustainable society, we have much to learn from these animals.

The whale issue also shows that environmental management is really only control over human behavior and is not the management of the environment itself. The whales and the ecology have managed to evolve themselves rather beautifully for millions of years without any help from human beings. As we are now learning, environmental disruption is really a conflict between humans. An assailant imposes damage on a victim through the intermediary of the biophysical environment. What is new is that we are realising that humans are not the only victims.

In the anti-whaling movement, we are asserting that there is something beyond "the machine in the garden threat", the atomic industry. We assert respect for other dimensions of the total ecology to which we are bonded by our animality as well as by virtue of our consciousness.

Time to be Outrageous!

Conflict clarifies reality. Friends of the Earth has become known for its militant engagement and willingness to confront institutions which are leverage points on the rest of society or reflect all the broader problems. Our tactic has been to dig out information in order to raise the questions which no-one every thinks of. This increases uncertainty and demonstrates the ignorance of our rulers. It stalls their action for a while (for example, the Fox Inquiry).

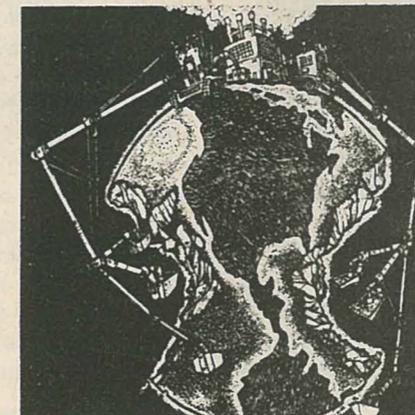
It is time to begin to extend our analysis from the initial reaction to environmental problems and fending off future destruction, to prevention and innovation. To date we have been outraged — by the values revealed by the actions of the uranium miners, by the French military at Mururoa Atoll, by the continued genocidal practices against the Aboriginal people by the miners, by the fraudulent inducement of cheap migrant labour into Australian factories with promises of sun, women and security. We should be as outrageous as possible, unashamedly promoting and building alternative structures to achieve the basics of self-reliance: food, shelter, access and information. In so doing, we must avoid the hip capitalist "consumption of lifestyles" approach.

Alternative projections of the future and "blueprints" for change are likely to be appropriated by the lonely, confused, hierarchically-organised and powerful ruling groups. Instead, we continually invent new ways of thinking and sharing these as widely as possible. We should be arming people with the conceptual tools they need to analyse their own situations. This challenge reduces the effectiveness of centralized directives and makes it increasingly unlikely that the values of the ruling groups will be translated into reality. We have to avoid the equal and opposite dangers of ignorance and expertism.

For example: uranium is found in

Australia. We run out of oil in the 1980s. We will then need to import oil which will increase our need to export to offset the imports. Conclusion: mine and export uranium. *But*, a different conclusion can be reached by the exercise of a little imagination, a faculty for which government is not renowned. If we leave uranium in the ground, the corollary would be to restructure our cities, get out of cars, into public transport and onto bicycles (free taxis for people with children), cluster recreational facilities outside of the cities and provide access by public transport, reduce accidents and hospital bills . . .

The engagement of people in interaction with the power structures at all levels is therefore of prime importance in laying bare those structures for all to see. Friends of the Earth cannot attain consciousness



for other people. A correct analysis is totally useless if it is not an authentic act of consciousness on the part of people. In the endeavour to evoke this awareness, there is a danger of over-reliance on the press. The mass media still inflicts its structures and marketing requirements on FOE. Whilst not suggesting that we neglect the press, the development of a self-organizing network of local-action groups is primary. The feeding of anxiety and questions into society by thousands of concerned people is far more effective than reaching the occasional convert through the mass media.

In light of the above, it is paradoxical to state that Friends of the Earth does not exist, or rather, that it exists only in people's minds. Because Friends of the Earth is a state of mind and not an organisation to which one 'belongs'. Friends of the

Earth can be everywhere because people are everywhere. The network can extend as far as people need it and sustain it. An important aim of Friends of the Earth is to do away with the necessity for our existence as fast as possible. Unless we are to become a thriving subculture totally separated from the majority of Australians and even protected by the dominant institutions and thus neutralised, we must strive to see ecological perspectives adopted throughout society and not maintained as a separate problem. We want people who are *not* Friends of the Earth arguing our case for us.

There is a danger that FOE will become more than its purpose and a communications switchboard to ensure the unity and effectiveness of action. There is an ominous trend whereby one can now 'join' Friends of the Earth as a token 'member'. Formerly one registered with FOE and contributed in whatever capacity one could. The reality hasn't changed much yet. But with the efforts to restructure the FOE groups to accommodate the vast influx of active and angry people there is a trend towards ossification. FOE must be able to evolve rapidly to surround problems. There is also the need for structure to get information to where it is needed most instead of merely into the hands of those who already have it. Decentralised structure, as Paul Goodman pointed out long ago, does not mean lack of coordination — it means a different kind of coordination, a response elicited by those most in need of whatever a social structure such as FOE is capable of providing. We should not perpetuate environment as a distinct issue and a separate ecology movement is not a viable long-term strategy. There is no future in Friends of the Earth.

Friends of the Earth can be a looking-glass for society. We flirt with current value systems and institutions with good humour so that people can better recognise themselves and current trends as dead ends. Friends of the Earth should be like a sharp knife pressed against the future, but grounded in current social and ecological realities. Otherwise we run the risk of being extremely active but sadly irrelevant.

Peter Hayes

FOOD CO-OPS

Max Smart and Barbara Hutton

What They Are and How to Set Them Up

We would like to begin by discussing in detail a few of the reasons why we think people start up and enjoy running food co-ops.

- **Anti-packaging.** Almost all food sold through supermarkets, and to an increasing extent through other shops as well, is prepackaged. There is also a rapidly increasing and disturbing trend towards the use of plastics in the production of packaging. These empty plastic wrappers and containers cannot be recycled by the industries that produce them nor do they make good compost! At present when food is bought in bulk it normally comes in either recycled cardboard or otherwise in useful sacks or tins. If co-op members then bring their own cannisters or recycled bags and containers when they come to the co-op there is very little (if any) waste of valuable resources via packaging.

The energy wasted on the production of packaging is on average about 8-10% of the total amount used in producing the goods, and this is without considering the energy used in distribution, retailing, and finally in disposing of the packaging. Packaging not only wastes resources (trees and oil) but is also a waste of labour. Enormous amounts of time and money are put into the design and production of packaging — the packaging is in many cases purely for advertising purposes and not to protect the product during transportation. The wasted labour and resources could be used on more socially-useful projects.

- **Over-processed food.** Many people who are concerned with the waste through packaging are also interested in avoiding *over-processed food*. The processing of food has reached amazing proportions.

- Commercially-produced orange juice sometimes contains powdered oranges, artificial fibre, chemical colourings, preservatives and synthetic vitamin C, and comes in a non-returnable plastic container which has limited uses when empty. Why do we need to use our valuable resources in industries which manufacture artificial food additives and non-returnable containers? Are these chemical food imitations better for our bodies than real food, i.e. the juice of a *real live* orange? After all we pay for the packaging and processing.

- **Self-Management.** A food co-op can be located anywhere that suits its members. It can sell almost anything the members want it to sell, be open when it suits them, and in all other respects operate the way they

want it to. All of the members can play an active role in its running and share the work and its resulting benefits. Co-ops are normally a more relaxed and less competitive way to buy food than the local supermarket. They are usually more personalised as well. The quality, type and, within limits, the price of the food stocked in the co-op can be determined by the members.

Running a food co-op gives people some experience of sharing — the work and the food. The members are involved in helping each other as well as themselves, and that helps develop a sense of community.

- **Keeping down food costs.** It is usually cheaper to buy food from a co-op than from a shop. The co-op buys in bulk and therefore at a cheaper unit price. The co-op doesn't need to spend money on packaging or advertising (neon lights and media advertising). Depending on where it is located the co-op may not have to pay rent (e.g. spare room of a member's house?). Because it wouldn't be located in a main shopping centre the rent would never be as high as for a normal shop. If the members are sharing all of the work associated with the operation of the food co-op no wages need be paid. There would not be any profit margin built into the prices.

Successful Food Co-ops

There are many different ways of organizing a food co-op because there are many groups of people with different needs. An individual group can work out the best form of organization for itself and this will probably change as the co-op evolves. Here are a few examples of food co-ops that have worked well.

A 15-Household Food Co-op

The following is a day-by-day description of a successful food co-op with about 15 households (approx 50 people) participating.

THURSDAY EVENING: People bring their households' weekly orders to a central house with their approximate value in cash, paper bags, and jars for honey and peanut butter. Also someone from the yoghurt-making household prepares sufficient skim-milk from dried powder and yoghurt-starter to make 20 kg yoghurt after incubation overnight; average cost, a couple of cents per kg. (There's no reason why a household should not make bread as well).

FRIDAY MORNING: Two or three people (rostered for the week) arrive to collate the fruit and veg parts of all the orders into a master shopping list, and then head

for the wholesale fruit and veg market in the co-op's truck (see 9 below). They park in one of the central aisleways. Here they check the various produce agents' stalls looking for the best value. Minimum quantity is usually a 20 kg bag or bushel box. Bargaining is accepted but usually at most 20-40 cents would be knocked off a \$3 item, and some agents don't like it. As they purchase items, the buying team writes down the prices paid on the master shopping list.

FRIDAY AFTERNOON: The morning's fruit and veg purchases are brought to a suitable room in the house of one of the co-op members, where the drygoods are stored in an old wardrobe and in plastic garbage bins (new). Some drygoods can be stored in the original boxes or packages and additional containers are not necessary. Two or three people from the rostered households weigh out the stuff into separate orders. The amounts may have to be varied — e.g. if 100 apples were ordered, and a box of 125 bought, then each household must take (and pay for) a few extra. It helps to put soft things like tomatoes on top, similarly with drygoods.

Now come the dreaded calculations — first working out the prices on the master list, and then pricing items and totalling on each order including 10% for extra costs — see 4 below. We use a printed form (see illustration). Rather than give change or collect extra money we keep a book with a weekly running balance for each house — the *balance* for any week is the surplus or shortage for the week added into the balance for the previous week.

DRYGOODS	ORDER	@	SUPPLIED	PRICE
Sultanas		price per multiple		
Dried Peaches		.37		
Brown Rice		.28		
Pnut Butter (supply container)		.36		
Raw Sugar		.22		
Honey (supply container)		.29		
Red Lentils		.20		
Soy Beans		.29		
Eggs (when available) (please bring empty cartons)		.40		
Fish (when available) (order 1 week in advance if possible)				
This week's order lb				
Next week lb				
Wine (when available) (tasting & bottling @ Gt. Buckingham)				
Other Goods (what can you supply or suggest)				

* MEETINGS If anyone sees a need for meeting of Co-op member households, please tell Abercrombie St people, who will try to arrange it.

* ROSTER

	Vegetables			
A	Arthur St	Friday June 1 B	August 3 C	October 5 D
	Gt. Buckingham St	8 C	10 D	12 A
B	Cambell St	15 D	17 A	
	Landsdowne St	22 A	24 B	
		29 B	31 C	
C	Abercrombie St	July 6 C	September 7 D	Drygoods
	17 Hugo 19 Hugo St	13 D	14 A	London St
D	Leichardt St	20 A	21 B	Malcolm St
	Nelson St	27 B	28 C	3 Hugo St

FRIDAY NIGHT/SATURDAY: People collect their orders.

DURING THE WEEK: Someone from the drygoods households (see 6 below) checks to see what items are running short, and goes to the appropriate wholesaler to buy, for example, 10 kg/drum of peanut butter, 20 kg/bag of soybeans, 15 kg/box of sultanas, 25 kg/bag of wholemeal flour, 5 kg/wheatgerm, 10 kg/bag of rolled oats. Then a couple of people weigh out the appropriate items into 1 kg paper bags so that it's ready to go on Fridays. And every couple of weeks there's the big event of muesli mixing: it takes an hour or so for two people to mix a 20 kg batch, and it's really worth it because we save twenty or thirty cents a pound over supermarket/health-food shop prices, and make better muesli.

There's quite a lot involved as you've seen, but this work is divided amongst the 60 or so co-op members (imagine the number of individual trips to the shops that they would have to make instead). This means that nearly everyone has to have a weekday free about once a month, so for some types of household a different form of organisation would be required. Where a number of households have young kids at home, a shared child-minding arrangement could be worked out to free people for going to the markets (and for any other reason on other days).

Some of the problems we've faced (and more of less solved).

1. *Size.* If the co-op's too small, each person has to work

House Name	FRIDAY	PRICE
VEGETABLES	ORDER	SUPPLIED @ PRICE
Onion lb		
Potatoe lb		
Pumpkin lb		
Cabbage item		
Carrots lb		
Cauliflower item		
Beans lb		
Brussell Sprouts lb		
Peas lb		
Silver Beet bunch		
Zucchini lb		
Capsicum item		
FRUIT (by 5's & 10's not 6's or 12's) (e.g. 25 not 2 doz.)		
Apple 5's		
Orange 5's		
Mandarin 5's		
Banana 5's		
Pear 5's		
CHEESE		
DRYGOODS etc (see back of form)	sub-total	
	sub-total from back	
Cash Supplied: \$	total	
Balance in Hand/Owing: \$	+10%	
	TOTAL \$	

When ordering, bear in mind seasonal availability and current market price (and refer to market reports on radio or in newspapers)

every couple of weeks, and the combined buying power is not great enough for wholesale buying. If too large, there is too much work necessary on each market day, organising a roster is very hard, and the whole co-op becomes too impersonal and bureaucratic. Around ten to fifteen households, i.e. about forty to seventy people, seems to work.

2. *Responsibility.* If the co-op depends on a very small number of people for organising or anything else, then the aspect of cooperation is reduced and the whole thing falls apart if those people become unavailable for any reason. Therefore the co-op has to be fairly simply organised, and everyone encouraged to learn how everything works (and to get to know one another).

3. *Trust.* If you're not prepared to trust everyone a little, you're not ready to join a co-op. We've found that there are almost no money problems, and that nearly every household does its fair share.

4. *Money.* A certain amount of capital is needed in order to have drygoods (groceries) in stock — \$1 per adult in our case. For the weekly orders, each household supplies the approximate value in cash with the order. Rather than give change or charge extra when the order is picked up, a running balance for each household is kept in a book (see illustration). Ten per cent is added to each order to cover losses and spoilage, transport costs and duplication order forms, and gradually to increase available capital for drygoods.

5. *Space.* The households must be reasonably close to a central storage and sorting place, and that place must be reasonably close to the markets or other source of food. There must be room for a drygoods storage cupboard and for sorting the orders on Fridays — an enjoyable chaotic process.

6. *Sharing the work.* The major part of the work for our co-op is on Fridays, collating orders, buying fruit and vegetables, and sorting the orders, so we have a roster with ten houses in groups of two or three over four weeks. The rest of the work — buying drygoods, mixing muesli, and weighing out everything into 0.9 kg bags — is done by the remaining three or four households as required, and when convenient for them. Small households containing only one or two members can take on such jobs as yoghurt-making.

7. *Quality.* Some fruit and vegetables can be obtained at extremely low prices after they've begun to perish. We find that nothing is good value if it will rot within a couple of days, and prefer to buy reasonably good produce at a fair price, knowing that it will last until it is eaten.

8. *Finding sources.* There are well-known wholesale sources of fruit and vegetables in most cities and towns, although they may have different methods of operation. Finding suitable drygoods wholesalers may be more difficult — use the phone book, ask friendly retailers (e.g. wholefood shops), inquire of wholesalers for sources of items they don't carry themselves, and ask other co-ops if you know of any.

9. *Transport.* After eighteen months of hassles over transport when we tried using co-op members' oddly assorted collection of vehicles to carry the food from the markets, we finally bought a co-op truck. This is half owned by one of the members and half by the co-op as a whole. The

agreement is that the truck must always be available for the co-op's use on Fridays. At other times, it is used by the part-owner, and it is also available for use by other members when he is not using it.

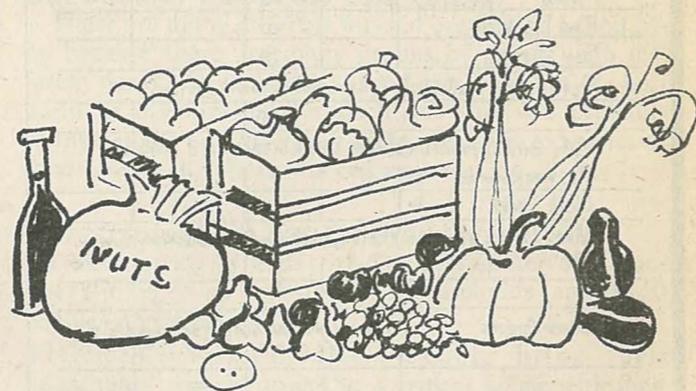
The above description of organizing a food co-op may seem slightly complex. However, it is not at all that way once the system has been tried. The detailed accounts need to be kept only if fresh fruit and vegetables are bought. As these are very perishable it is imperative to have people's money in advance so that if any food is not collected it is the individual household (and not the co-op) that loses. Because of their perishability fruit and vegetables have to be purchased every week. *This may seem like a lot of work but buying collectively can actually save work if each household does its share.* Of all possible problems with co-ops the greatest is that some people do not do their share of the work and we strongly recommend the use of rosters to overcome this.

A Friends of the Earth Co-op

Another food co-op that has survived is the Friends of the Earth co-op in Melbourne.

It started up with someone just selling honey and the range of food available expanded as the number of people who joined expanded. Each new member paid \$5.00 to join, which meant that additional things could be bought. People still use the co-op as a place where they can sell produce (e.g. bread and cakes) or give away things like lemons if they have a surplus from their garden.

The goods are sold at slightly above cost price. The money the co-op makes goes back into expanding the range of goods and paying the rent. Some of it also goes to pay one person to work full-time minding the co-op.



Barbara Hutton

He is paid only about the equivalent of unemployment benefits, and is assisted by people who work in a voluntary capacity either refilling containers of food or minding the co-op. Even now it would not require someone to work full-time if more people were prepared to help on a regular basis, but it needs someone to work full-time if people can't be relied on to come in regularly.

The members of the co-op bring their own containers and serve themselves, but there has to be someone in the co-op to take the money. The people weigh out the food for themselves and work out how much it costs. Occasionally we check it to make sure they aren't cheating. You can trust most people but there are some who will try to rip it off. A food co-op at Nimbin went broke because people just didn't pay for all the food they took.

Now we stock a variety of nuts, dried fruit, herbs and spices. We have bulk honey, peanut butter, vegemite, tahina, assorted seeds and legumes. We don't have things that are perishable. People will buy perishable things like fruit, vegetables and bread if they're there on a regular basis, but if they're only there once in a while they'll go stale because people don't know about them and can't be sure of getting them consistently.

This co-op is very different from the one already mentioned. The members do not have to work out a list of what they want in advance: they just come in and pay for whatever they take from the bulk containers there. The co-op is open every day, so they can come in any time.

The co-op can now pay someone to keep it open full-time, but it took several months (during which people worked for nothing and the rent was free) to get it established. There are at least 150 households in the co-op and a lot of money changes hands but it still could not pay award wages and depends on having a person who will run it on very low wages.

Food co-ops run by colleges and universities are better off in some ways because they have a bigger organisation backing them up.

Another Kind of Food Co-op — Melbourne University

The food co-op at Melbourne University has a small group of members who help with the work and there are also two people paid shop-assistant rates who work on it full-time. The students' union put in the money to start the co-op. It buys food in bulk and sells to anyone around the university. Members get their food 10% cheaper than other people because they participate in running the co-op and put work into it.

There is no profit margin, and normally no packaging; however, if people don't bring their own paper bags they have to pay for them. Because this co-op sells to non-members it has to observe rules and regulations which would apply to a normal shop (things like providing a sink and shelving so that no sacks of food are left on the floor etc.).

Starting Up a Food Co-op

The basic idea is that everyone pays a membership fee, which provides the capital to buy the goods. Some money is needed to start with because goods must be paid for as soon as they're delivered, whereas it might take a couple of weeks to sell a large bag of flour and get the money back, and it might take months to sell a bag of spice.

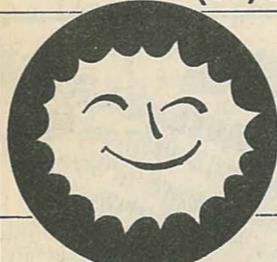
You can't sell direct to people who come in off the street. To avoid complicated rules and regulations connected with running a shop, the co-op can only serve its members and not the public. The members put in the money and share the benefits: it's not strictly the same as buying and selling.

Stock

When deciding what the co-op should stock it is a good idea to ascertain what can be bought freshly and at reasonable prices without collective buying. These are the things the co-op needn't bother with initially; start off with things that are hard to get or expensive when bought from retail shops. For example, pure unrefined honey, direct from the apiarist, is hard to get. Quite often the dried fruit sold in shops is old, so fresh dried fruit is another thing worth stocking. Bulk cooking oil is something else you can save quite a lot of money on.

By starting with these things people will immediately see the benefits of collective buying. The product range can always be extended to cover the more basic items later on. Furthermore, *if the co-op has problems people are more likely to persevere if they get things through the co-op which they can't get from ordinary shops at similar prices.*

Solar Transmission (Aust.),
Tel. (03) 96 1974



SOLAR BATTERY CHARGERS

Let the sun charge your batteries.
Ideal for all remote areas:
Lights, pumps, radios etc.

12 VOLT FROM \$145 (plus tax if applic.)

write to: 24 Windale St, Dandenong 3175

OVER 25,000 COPIES SOLD

3RD PRINTING

THE CASE AGAINST URANIUM MINING



RED LIGHT FOR YELLOW-CAKE

DENIS HAYES JIM TALK NEIL BARRETT

RED LIGHT FOR YELLOW CAKE is the first single publication to give the facts about Australian uranium mining and its global implications.

Presented in non-technical language, it looks at:

- URANIUM MINING — a history of pollution and Aboriginal oppression and the prospect of worse to come.
- THE FOX REPORT — what it *really* said.
- NUCLEAR REACTORS — a spotted safety record and the potential for horrendous disaster.
- Nuclear proliferation, waste leakage, nuclear terrorism and many other key issues.

RED LIGHT FOR YELLOW-CAKE IS AVAILABLE FROM LEADING BOOKSHOPS AND NEWSAGENTS AND FROM FRIENDS OF THE EARTH OFFICES.

Drygoods versus Perishables

The basic differences between stocking drygoods (e.g. rice, flour, sultanas, sugar, dried fruits and nuts, herbs) and fruit and vegetables are:

1. Drygoods may require storage space — depending upon quantities bought and the number of households in the co-op.
2. Fruit and vegetables can be divided between the co-op members immediately after purchase and will not need storage space.
3. Drygoods can be purchased on, say, a monthly basis whereas fruit and vegetables need to be purchased weekly.
4. Fruit and vegetables have varying appeal to different people so buying by the case can be difficult unless there is a minimum of 15 households involved. Drygoods have wider appeal and fewer households can share these items as they stay fresh much longer.

Running the Co-op

Working people who can't take a day off to do the marketing will have problems in running a food co-op. They could possibly do the shopping on a Saturday morning. Perhaps a better idea would be to buy stocks through another food co-op which is already in existence. They could arrange to pick up the food after hours (since food co-ops can stay open as long as they like). A list of some existing food co-ops is given at the end of this article. If you are thinking of setting up a co-op we strongly recommend that you talk to someone from one of these co-ops. They can tell you which wholesalers are cheapest and help in other ways.

When the co-op starts ordering really big quantities of goods the wholesalers will deliver, however, wholesalers do not like dealing with small quantities of goods. This is another reason why food co-ops should work together, sharing bulk supplies.

Food Co-ops for Isolated Communities

At this stage there are not many food co-ops in operation in Australia (as far as we know) and they are mostly situated in universities and other areas where people have access to good food anyway. However, if food co-ops spread to areas where people are a long way from fresh fruit and vegetable markets etc, they could have a great effect on people's lifestyles. There have been suggestions of setting up food co-ops for people in Housing Commission flats, where mothers may have several children and

can't go very far afield to shop. They are forced to buy their food from the nearest supermarket or from corner stores where the food is very expensive. Their main problem is lack of space: they have no room to store anything. However, if they could organise a food co-op it could work very well, with so many households living together, and the food co-op could help to develop a sense of community among the people living in the flats.

Many Aboriginal settlements are in remote areas, where it is difficult to get supplies of fresh vegetables, fruit and meat. The Aborigines at Lake Tyers buy most of their food from a shop which sells only white bread, tinned food etc. and no fresh vegetables. Many Aborigines have grown up on a diet based on white flour and sugar because of this remoteness. Food co-ops could help to provide them with better food at lower prices (depending on what they want to eat of course). Aborigines at Lake Tyers who are attempting to run farms could sell their own produce through the co-op.

If food co-ops ever do get established in the outer suburbs and among underprivileged people they will probably be very different from those that are operating now. They may emphasise saving money, rather than buying health foods, and will stock completely different kinds of food. The most important thing about a food co-op is not how it runs or what it sells, but that it is run for the benefit of the people who are using it.

Some Co-ops and Semi Commercial Ventures in Australia

South Australia

"Clear Light", Rundle Street, Adelaide.

Queensland

Griffith University has a food co-op. There is also a vegetarian food shop called Whole Foods on the corner of Jones St and Milton Road, Auchinflower.

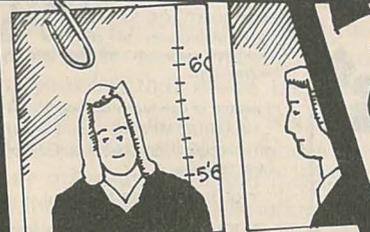
Victoria

As well as Melbourne University, Monash has a co-op (The Pantry). Friends of the Earth, Ballarat (103 Raglan St, South Ballarat), and Friends of the Earth, Carlton (51 Nicholson St), have food co-ops.

There are several others in existence in Victoria and other States. Try asking at universities and colleges.

Notes:

1. This account was first published in the *Alternative Pink Pages*, Sydney.



NAME... SIMON BAIN
ADDRESS... 42 GORDON ST
AGE... 26 DATE OF BIRTH...
HEIGHT... 5'11"
COLOUR OF EYES... GREEN
RELIGION...

CIVIL LIBERTIES AND URANIUM MINING SEMINAR

SUNDAY NOVEMBER 13th 1-5 PM MELBOURNE UNIVERSITY

UNDER THE ATOMIC ENERGY ACT. 1953 POLICE HAVE THE RIGHT TO SEARCH AND ARREST WITHOUT WARRANT AND TO CONVICT PEOPLE WITHOUT PROVING AN OFFENCE

UNDER THE APPROVED DEFENCE PROJECTS PROTECTION ACT ACCOMPANYING THE ATOMIC ENERGY ACT 1953 PERSONS CAN BE FINED OR JAILED FOR DOING ANY THING THAT HINDERS OR OBSTRUCTS URANIUM MINING INCLUDING WRITING OR SPEAKING AGAINST IT

GUEST SPEAKER

JOHN BASTEN faculty of Law, Uni of N.S.W.

FURTHER DETAILS: ANTI-URANIUM COORDINATOR. FOE CARLTON (03)3476700

BUNYIP

by RICHARD LITKE

The Bunyip is found in Aboriginal legends and numerous 'sightings' by early colonists. The creature's physical appearance has never been rightly agreed upon.

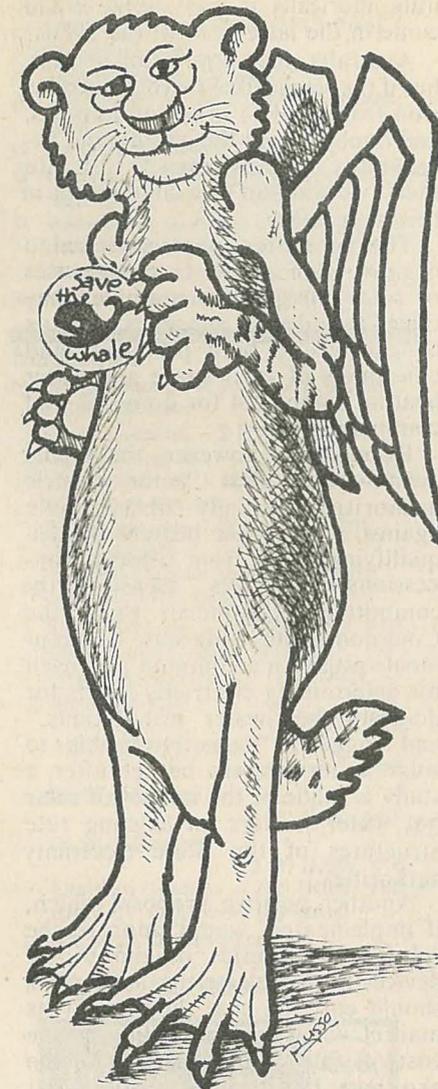
Never had there been such a dry. The blue-green hues of the land's vegetation had long since turned a lifeless brown. Ranchers could only stand and watch their cattle die of thirst, farmers their crops. And drink their beer in the pubs cursing the hellish weather.

It was hard times for the bush animals as well. Kangaroos, dingos, cockatoos, all suddenly became equals, all sharing the same enemy: thirst, lack of food, death. No animal was spared, not even the Bunyip. The cool dampness of the billabong, where it lived for decades in contentment, was slowly drying up, leaving its Square-lipped Rhinoceros-shaped body exposed to the hot blaze of the sun's rays. The crayfish and frog's eggs it usually fed on were vanishing with the waters. The Bunyip's Scaly-tailed Possum-like belly was now a thin strap, the ribs taking the space where muscles used to be. Its mouth filled with the fluid of juiceless saliva; its eyes with desperation and despair. Tortured by hunger, badgered by heat, the Bunyip slowly, reluctantly, almost sensing its doom, made its way out of its home into the warm, cool night.

Its two Hawaiian Monk Seal-like fins were not used to the hard, stony land, so going was slow.

After running many miles, the Bunyip stopped to rest its Tiger paws. Suddenly, its keen sense of smell picked a scent out of the air, life — food!

On it flew, over the miles of barren land, past hundreds of dry river beds, the stretch of its California Condor-like wings silhouetted against the black sky. Straining its Galapagos Hawk-like eyes to see what its Black-footed Ferret sensitive nose said was there. Finally, it spotted its quarry, livestock pens, scattered around a small cluster of houses, shops, and a pub.



Possum-like body. A voice, then another, and still more yelling, all coming towards it. Another shot and the Bunyip is running. It ran over hills, across the dry cracked mud of river beds, and still it ran until exhausted it laid on a ridge top to rest. No longer feeling hunger, only the constant throb in its side. It looked up, the moon came out from behind a cloud and touched the head of the Bunyip with its reddish light. Death was at hand.

The peacefulness of the night wind was broken only by the sounds of barking dogs, followed by voices yelling. The Bunyip picked its Polar Bear-like head up towards the hazy disk in the sky and let out one long last howl.

A light flashed on the Bunyip and then another. A noise ripped through the night and into the Bunyip's body. And another and still another. Cheering was heard with every hit. Seeing it was dying, the dogs were set loose on it. The Bunyip closed its eyes.

Having killed the Bunyip, they tied a rope to its Gaint Sable Antelope-like tail and dragged it by horse back to town. The men bragged who shot it first, they joked, they sang, they drank, they congratulated themselves on killing it, they were happy they had something to divert their attention to and forget about the weather. None of them saw the blurred eyes in the dead Bunyip's head. Only the radiance of the far off mountains and gentle blowing night wind took any notice of the Human-like body the men dragged along behind them.

For all creatures endangered of extinction:

- Square-lipped Rhinoceros
- Scaly-tailed Possum
- Hawaiian Monk Seal
- Tiger

- California Condor
- Galapagos Hawk
- Black-footed Ferret
- Southern Sea Otter
- Asiatic Lion
- Leadbeater Possum
- Polar Bear
- Gaint Sable Antelope
- Human Beings.

BOOK REVIEW

SOLAR ENERGY



Senate Standing Committee on National Resources. Australian Govt. Pub. Service, Canberra, 1977. 92pp, \$2.80

In so far as this report from six honourable Senators will help usher in the solar age, it might as well be burnt one cold day as a renewable source of heat.

The dominant chord is one of pessimism. One by one, the hallowed 'alternative technologies' — solar heat, wind and solar electricity, wave and tidal power, bio-conversion — are cursorily cross-examined, dismissed as technically unproven, and/or (worse still) 'not economically viable', and then put into the 'wait until next century' basket.

The report correctly identifies the imminent exhaustion of Australia's oil reserves as the most urgent energy problem confronting this country and correctly reaches the conclusion that renewable liquid fuels such as alcohol from certain plants won't be any help in meeting the shortfall when the crisis hits in the 1980s.

The report holds there is no immediate problem in other areas of energy supply: Australia has enough coal and natural gas to supply electrical and heat energy well into the 21st century. It concludes the need for solar energy in these sectors is not that urgent.

These two conclusions have lulled the committee into a pessimistic and complacent attitude as to the urgency of deploying solar technologies in Australia. "Solar energy will not make any significant contribution to Australia's energy needs before the end of the century," it asserts.

With regard to natural-gas reserves, there is certainly no room for complacency. The committee assumed (presumably) that Northwest Shelf reserves would be used

throughout Australia, whereas we now know that 53% will be exported, and the rest consumed in Western Australia. Even Doug Anthony admits shortfalls in gas supply could come in the latter half of the 1980s.

Australia does have a lot of coal, but if (as seems likely) synthetic oil is won from coal to offset oil imports, and doubts about the quality and accessibility of many deposits turn into facts, we shouldn't be complacent in this area either.

The committee adopts a neutral to negative stance even to proven uses of solar energy. For example, they reject the idea of subsidies and tax concessions to both producers and consumers of solar space and water heating equipment for domestic and commercial use.

Revealingly, however, the report acknowledges that "some electric authorities actively discriminate against solar water heaters by disqualifying them from offpeak concessions and tariffs." Sensibly, the committee recommends that "the Commonwealth and State Governments establish a common approach for determining electricity tariffs for domestic hot water installations," and suggests "rates applicable to solar water heaters be set after a study is made of the impact of solar hot water heaters on existing rate structures of the State electricity authorities."

Another positive proposal which, if implemented, would improve the relative economics of many AT devices is that electricity authorities should cost the coal they use at its market value, not according to the cost of simply digging it out of the ground. The report notes that electricity authorities would come up with very different off-peak rates or delete them entirely in the interest of preserving their coal for future generations.

Of all the potential applications of solar energy, the committee is most enthusiastic about the use of low-temperature (60 — 20°C) solar process heat for industry. The interesting new solar collectors for the production of this higher-grade heat (the cascaded flat plates of CSIRO, and the evacuated glass tubes of Philips, University of Sydney, and NSW Institute of Technology) were noted, as was the CSIRO's submission that "there is no technological reason why some 40% of Australia's

heating needs for industry, commerce and homes could not be provided from solar collectors by the end of the century" — hardly an 'insignificant quantity'.

But again the final words were negative: "For the present, given the availability of cheap natural gas, pricing policies of electricity authorities, which provide discounts for bulk users, and competition between State Government authorities to attract industry to particular regions, solar heat generating systems seem uneconomic for most applications."

The committee continues limply: "Industrial applications of solar energy will be taken up when they become economic." It is completely unwilling to suggest that Governments should intervene with subsidies, tax concessions or other financial incentives to encourage use of solar energy.

One way to raise this money would be by a resource tax on all non-renewable fuel sources and minerals, imposed at a level calculated according to a resource's abundance and rate of depletion. This would serve the double-edged purpose of raising the price of non-renewable fuels and promoting energy conservation, while stimulating a changeover to renewable sources of energy supply.

If today's economics make alternative energy sources look hopeless, it's the economics that are crook not the alternatives!

The committee calls for a national energy policy, and an Australian Energy Commission to oversee energy R and D generally. Unless the Government and this Commission are willing to tackle fearlessly the problems of removing economic and other barriers to use of solar energy, I can't see these measures being much use.

On one point I wholeheartedly agree with this report: "The success in meeting timescales to develop and introduce new technologies will depend entirely on political sagacity and the vigour with which the problem is faced."

That's true. That's why we're pessimistic about relying on central government action to lead us towards a sunny future.

John Andrews

RESOURCES

key

N — Nuclear. E — Environment.
A — Alternatives. G — General.
Ab — Aboriginal. () — States available.

Leaflets (free)

- N Why stop uranium mining (ACT, N Uranium and you (VIC)
- G Energy and employment (WA)
- G Centralisation and vulnerability
- N Uranium mining and equality (ACT)
- E Save the whale (NSW, VIC, SA, ACT, QLD)
- E A Queanbeyan soft drink factory (ACT)

Papers/Broadsheets

- N Nuclear weapons and Australian uranium (VIC, ACT) (20 cents)
- N Uranium mining: Impact on the Australian economy (VIC, ACT) (20 cents)

Friends of the Earth (Aust) Research Paper No.1 June 1977

THE NUCLEAR POWER EXPERIENCE IN JAPAN:

Today Japan is taking steps to ensure its continuation of world and technological development by embarking upon one of the most advanced and ambitious nuclear programs in the world. For Japan the peaceful atom represents a clean, safe, environmentally acceptable and economically desirable energy source for many decades to come.

Australian Uranium Producers Forum Advertisement in the Melbourne Age, June 4, 1977

Exposing The Myth

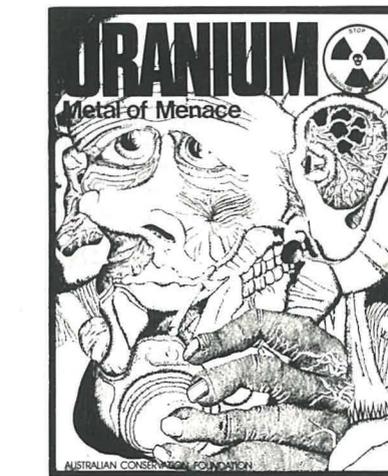
Neil Barrett

- N Nuclear power experience in Japan: Exposing the myth (VIC, WA, ACT, NSW) (20 cents)
- N The incident at Brown's Ferry (NSW, ACT, QLD) (20 cents)
- N Slow burn (QLD)
- N The story of nuclear power plants (ACT, QLD) (20 cents)
- N The deflation of Rancho Seco (ACT, QLD) (20 cents)
- N The case against mining and export (QLD)
- E Forestry massacre (SA, QLD)
- E Inside Micronesia (QLD) (20 cents)

- A Non-nuclear futures (NSW, VIC, ACT, QLD) (20 cents)
- A ACF energy broadsheet (VIC) (free)
- A Bicyclisation (QLD)
- A National commuter (QLD)
- A Technology . . . New Scientist reprint (QLD)
- G Not man apart (ACT)
- G International Whaling Conference ECO's Nos. 1, 2, 3, 4 (VIC, ACT) (free)
- N Radioactive pollution of the environment by the nuclear fuel cycle (ACT) (40 cents)
- N Nobody needs uranium (WA) (free)

Magazines

- G Chain Reaction — 1 (4) (VIC, ACT, QLD) (20 cents)
- Chain Reaction — 2 (1) (VIC, ACT, QLD) (25 cents)
- G Chain Reaction — 2(2) (VIC, SA, ACT, WA, QLD) (\$1.00)
- Chain Reaction — 2 (3) (SA, ACT, QLD) (\$1.00)
- Chain Reaction — 2 (4) (NSW, VIC, SA, WA, ACT, QLD) (\$1.00)
- G Chain Reaction — 3(1) (VIC, SA, ACT, WA, NT, QLD, NSW) (\$1.00)
- N Uranium Deadline — 1 (1,2) (ACT, QLD) (\$1.60)
- 1 (3) (NSW, VIC, ACT, QLD) (50 cents)
- 1 (4) (VIC, ACT, QLD) (60 cents)
- 1 (5) (VIC, ACT, QLD) (60 cents)
- 2 (1) (NSW, VIC, SA, ACT, QLD, WA) (60 cents)
- Uranium Deadline — 2(2) (NSW, VIC, SA, ACT, QLD) (60 cents)
- 2 (3) (NSW, VIC, SA, ACT, QLD) (60 cents)



Booklets

- N The rocky comic (ACT) (75 cents)
- N Uranium Metal of menace (ACT, QLD) (\$1.00)
- N First Fox report (abridged) (QLD, VIC) (40 cents)
- N Give me water (NSW, QLD) (60 cents)
- N The uranium debate: a trade union contribution (WA) (40 cents)
- N Inspect Uranium School kit (VIC) (\$1.50)
- E Is recycling the solution (NSW, VIC) (\$1.20)
- E The Merrie creek study (VIC) (\$2.50)
- E The great forest sell-out (ACT) (50 cents)
- E Australia uprooted (ACT) (20 cents)
- A Getting on the right track (ACT, VIC) (\$1.00)
- A Energy strategy: The road not taken? (NSW, SA, QLD, ACT, VIC, WA) (\$1.00)
- N The politics of nuclear power (ACT, VIC) (40 cents)

ENERGY STRATEGY

The Road Not Taken?
AMORY LOVINS

G Worldwatch papers (NSW) (\$2.00)

Books

- Ab Mapoon — book 1 (NSW, VIC, ACT, QLD) (\$1.80)
- book 2 (NSW, VIC, ACT, QLD) (\$1.80)
- book 3 (NSW, VIC, ACT, QLD) (\$1.80)
- N The menace of atomic energy (Ralph Nader) (VIC) (\$2.75)
- E Incredible Fraser Island (ACT) (\$4.00)

prices are the suggested donations

*please make generous allowance for postage.

- N Nuclear power — Walt Patterson (NSW, VIC, ACT, QLD) (\$2.95)
- N Red light for yellow cake. The case against uranium mining (Falk, Barrett, Hayes) (NSW, VIC, SA, WA, ACT, QLD) (\$1.00)
- N Rush to destruction (ACT) (\$6.00)
- E National parks for Cape York Peninsula (ACT) (\$2.25)
- E Green bans (ACT) (\$7.00)
- E Alps at the crossroads (ACT) (\$4.50)
- A World energy strategies. Amory Lovins (NSW, VIC, ACT, QLD) (\$4.50)
- A Non-nuclear futures. The case for an ethical energy strategy, A. Lovins. (ACT, QLD) (\$5.00)
- A Direct use of the sun's energy (ACT) (\$2.75)
- G Confronting the future, C. Birch (NSW) (\$2.95)



- Stop Uranium Mining (NSW, VIC, ACT) (20 cents)
- Ban Nuclear Warships (VIC, ACT) (20 cents)

Posters

- Whales by Jenny Talbot (VIC, WA) (\$1.00)
- The Great Whales (SA, WA, ACT, VIC) (\$2.00)
- Calendar (NSW, VIC) (\$1.00)
- E Let's communicate (Whales) (VIC — free; WA — 75 cents)

Key Rings

- Save the Whale (WA) (20 cents)

T-Shirts

- Whale (NSW, SA, WA) (\$4.00 adult and \$3.60 children's sizes)
- Friends of the Earth (NSW, VIC, SA, ACT) (\$4.00)
- Stop Uranium Mining (NSW, WA) (\$4.00 adult, \$3.60 children's sizes)
- Only Safe Nuclear Reactor (WA) (\$4.00 adult, \$3.60 children's sizes)
- Keep Uranium in the ground (WA) (\$4.00 adult, \$3.60 children's sizes)
- Uranium. No thanks. (ACT) (\$4.00)
- Save a tree (ACT) (\$4.00)

Films

- N Nuclear Dilemma (VIC)
- N Energy: The Nuclear Fission Alternative (NSW, VIC, ACT)
- N Hiroshima Nagasaki (NSW, VIC, ACT)
- N Lovejoy's Nuclear War (VIC)
- N Dale Bridenbaugh (NSW)
- A Energy: Less is More (NSW, VIC)

Videotapes

- N Energy (WA)
- N Uranium (WA, VIC)
- E Whales (WA)

Slides

- N Dale Bridenbaugh (NSW)
- N Rum Jungle (NSW)
- E Fraser Island (NSW)
- E Whales (WA)

Speakers On:

- Uranium (NSW, VIC, SA, ACT, QLD, WA)
- Whales (ACT, WA)
- General Environment (NSW, VIC, SA, ACT, WA)

Collectives — Working Groups — Workshops

- Publications Collective (VIC, ACT, QLD)
- Uranium (NSW, VIC, SA, ACT)
- Alternatives (NSW, SA, VIC — Stephen Ingrouille 41.5575)
- Whales (Project Jonah — NSW, SA, ACT)(VIC)
- Food Co-operative (VIC — Max Smart 347.6788)
- Newsletter (VIC)
- City Organic Gardening (VIC — Stephen Trednick 347.6788)
- Office (VIC)
- Music (VIC — Stephen Ingrouille 41.5575)
- Chain Reaction — published in Melbourne.
- Uranium Deadline — published in Sydney.
- Antarctica (VIC — Brian Appleford 03-347.6788)

Stickers

- Stop Uranium Mining (NSW, VIC, SA, WA, ACT, QLD) (20 cents)
- Save the Whale (NSW, VIC, WA, ACT) (25 cents)
- E Let Whales live (VIC — 20 cents; WA — 30 cents)
- E Whaling is murder (VIC — 20 cents. WA — 30 cents)
- N Stop uranium mining in Greek, Italian (VIC) (20 cents)
- Solar Energy (NSW)
- Save Native Forests. Stop Woodchipping (ACT) (40 cents)

Badges

- Uranium. No thanks (NSW, VIC, WA, ACT) (20 cents)
- People need Public Transport (WA) (20 cents)
- Save the Whale (NSW, VIC, SA, ACT) (50 cents)

FRIENDS OF THE EARTH AUSTRALIA

MELBOURNE
51 Nicholson St., Carlton, Victoria 3053. PH: (03) 347.6630

SYDNEY
423 Crown St., Surry Hills, NSW 2010. PH: (02) 698.9714

ILLAWARRA
PO Box 25, Warrawang, 2502.
A.C.T.

PO Box 1875, Canberra City, ACT 2601. PH: (062) 47.3064

ADELAIDE
310 Angas St, Adelaide, S.A. 5000.
PH: (08) 223.6917

PERTH
C/- W.A. Env. Centre, 537 Wellington St., Perth 6000.
(092) 21.5942

DARWIN
PO Box 2120, Darwin, N.T. 5794. PH: (089) 81.3804

BRISBANE
235 Boundary Rd., West End, Brisbane. 4101. PH: (07) 44.1766.

TOWNSVILLE
PO Box 5115, Townsville, Qld 4810. PH: (077) 71.6226.

NEW ZEALAND
PO Box 39065, Auckland West, NZ.

JOIN FRIENDS OF THE EARTH

Simply fill out this form and send it to your local FOE group.
Enclosed is my yearly membership fee of \$10 or ANY SUM THAT I CAN AFFORD
The membership fee of \$10 includes a subscription for one year to *Chain Reaction*, and by joining FOE you will also receive our members' newsletter and various other publications/information.

NAME

ADDRESS

TELEPHONE

I can actively help by: assisting with publications starting a new group secretarial work other Special skills

SUBSCRIPTION/PUBLICATION ORDERS

(send to your local FOE group)
Non-member Subscription to *Chain Reaction* and/or *Uranium Deadline* (see FOE Publication Notices):

I wish to subscribe to:
Chain Reaction (\$4 for one year, four issues)
Uranium Deadline (\$6 per year for individuals and libraries, \$10 for other institutions / organisations, — 8 issues)

Other Publications available through FOE:
Please forward the following publications (include number of copies required):

A cheque/postal order for \$ is enclosed.

NAME:

ADDRESS:

POSTCODE: TEL.