FRIENDS OF THE EARTH'S

CHAIN REACTION

Registered for posting as a publication Category B.

THE THREAT TO OUR OCEANS

NUCLEAR POWER IN AUSTRALIA

VOL·4 NO·4 1979 $1

Chain Reaction

EDITORIAL

Are the oceans – from which we derive so much and without which all life on earth would die – threatened?

The answer would seem to be yes.

From pole to pole the oceans are subject to overfishing, pollution and neglect. Environmentalists have been warning for years that the oceans cannot take the abuse they have been receiving. In 1971 Jaques Cousteau told a U.S. Senate Sub-committee that another 50 years of pollution would *"mean the end of everything"*. Yet generally nothing is being done to curb the situation.

D.D.T. and P.C.B. have been found in the bodies of Antarctic Penguins. Pollution is largely responsible for the virtual extinction of the Mediterranean Monk Seal. Thousands of birds die annually due to oil pollution. Fisheries around the world need urgent attention to arrest declines in populations. Many species of whales are in danger of dying out and the same is true of dugongs and manatees. Sharks and some other fishes have high body concentrations of mercury.

In this issue of Chain Reaction, we look at some of the problems affecting the marine environment. However there are so many threats that it would take hundreds of editions to document them.

Each marine disaster is a warning (as is the sombre message of the Harrisburg Nuclear Power Station leak) yet to a degree the warnings have gone unheeded.

Ships are still spilling oil at sea. Whales are still being harpooned. Fisheries are still at danger levels.

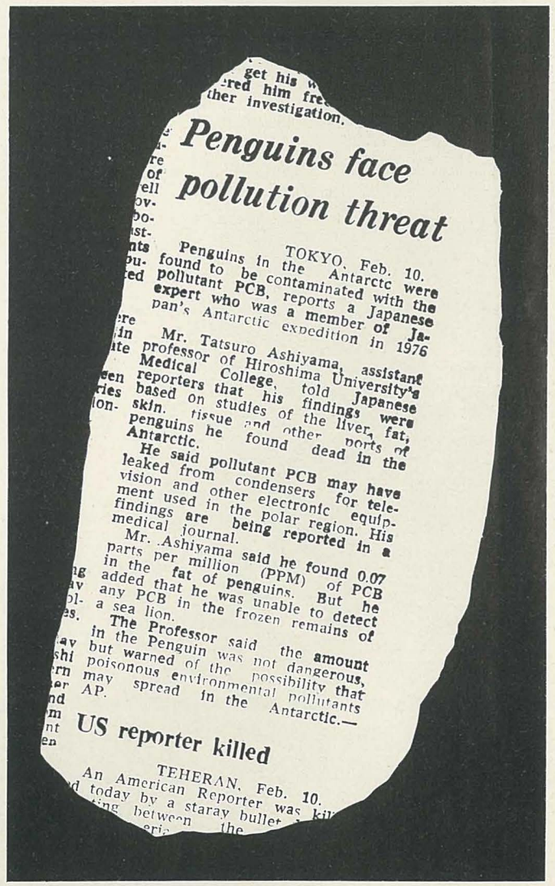
The seas are still dying.

International concern is growing though and although some countries are resisting pressure to take action others are beginning to see that they have responsibilities to the marine area.

Australia can also do more. Creation of marine parks, absolute banning of oil drilling on the Barrier Reef, tighter control of fisheries, restriction of the dumping of toxic wastes and effluent in rivers or into the sea, and other actions are needed.

The seas might be dying but they can be revived.

We are optimistic that sanity will prevail and the seas will live forever.



get his w...
...red him fre...
...ther investigation.

Penguins face pollution threat

TOKYO, Feb. 10.

Penguins in the Antarctc were found to be contaminated with the pollutant PCB, reports a Japanese expert who was a member of Japan's Antarctic expedition in 1976

Mr. Tatsuro Ashiyama, assistant professor of Hiroshima University's Medical College, told Japanese reporters that his findings were based on studies of the liver, fat, tissue and other parts of skin. penguins he found dead in the Antarctic.

He said pollutant PCB may have leaked from condensers for television and other electronic equipment used in the polar region. His findings are being reported in a medical journal.

Mr. Ashiyama said he found 0.07 parts per million (PPM) of PCB in the fat of penguins. But he added that he was unable to detect any PCB in the frozen remains of a sea lion.

The Professor said the amount in the Penguin was not dangerous, but warned of the possibility that poisonous environmental pollutants may spread in the Antarctic.— AP.

US reporter killed

TEHERAN, Feb. 10.

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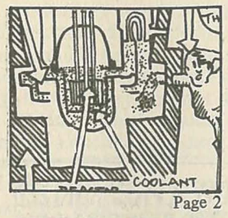

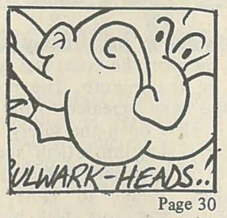

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Chain Reaction is the quarterly magazine of Friends of the Earth Australia. Opinions expressed in Chain Reaction are not necessarily FOE policy. Articles, letters and orders welcome. Address correspondence to:

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Harrisburg
How it Happened

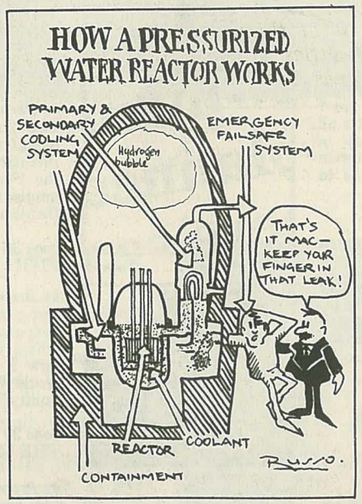
"What people around here are saying about the Harrisburg accident is that it's doing to the nuclear power industry what the Tet offensive did to the Vietnam War. Just like after Tet, the public feels it can no longer believe what it's been told."

–staff member of the US House of Representatives Energy Committee.

Pennyslvania, Wednesday 28 March: A reactor at 3-mile island, 40 km from the regional capital of Harrisburg and only 200 km from Washington developed problems. What really happened is blurred by the contradictory statements and half-truths put out by Metropolitan Edison, the company which owns the reactor, and the Nuclear Regulatory Committee, but it appears to have been as follows:

First a pump failed in the reactor's secondary cooling system, which feeds steam to the turbines. The turbines ground to a halt and in the reactor the control rods slammed down automatically, closing off the chain reaction. This in itself was nothing extraordinary for the 3-mile island plant. It had opened prematurely, on 31 December, to take advantage of tax concessions for the year 1978, and had been suffering minor mechanical breakdowns regularly ever since.

The disaster which followed was triggered by a series of little breakdowns and mistakes, amounting to one gigantic bungle. Atomic reactors must be constantly cooled, even after shutdown, because of the spontaneous decay heat given off by the radioactive fuel elements. But the Harrisburg reactor wasn't being cooled: the secondary cooling system had been put out of action and the auxiliary cooling pumps which should have come into play had been disconnected for maintenance, unbeknownst to the control crew.



The water in the primary cooling system, nearest the core, was getting hotter by the minute. The pressure inside the core increased to the point where it blew open the safety valves and steam gushed into a tank, specially designed for such an emergency. But the valves, meant to close when pressure in the core was back to normal, jammed open. The tank overflowed and flooded the building in two metres of water.

As the pressurized water gushed out of the core half a metre of the fuel rods was left above water level. The temperature of the rods climbed to 750° Celsius and then went off the scale. Inside the control room a computer began printing out a series of question marks: something was wrong in the core. Three separate warning lights seemed to indicate that the core was flooding with water, so the operator turned off the emergency core cooling system, the only thing that was now keeping the reactor cool. What he did not know was that all three lights were connected to the same instrument, which had failed.

Inside the reactor core the fuel rods, nearly melting, burst their casings, releasing huge amounts of radioactivity. No one could now go into the containment building to see what was going on: radiation would have killed them in 30 seconds. For 15 hours the operators turned the core cooling system on and off, not knowing what was going on.

Meanwhile the water flooding the containment building was pumped to outer building which had no radiation protection, and the steam was vented into the atmosphere. The workers at the station were probably not aware at this stage, that it was laden with strontium 90, krypton and other radioactive elements, or that iodine 131 was escaping from the plant. Strontium 90 has a tendency to become incorporated into bone, where it causes leukemia. Iodine 131 causes cancer of the thyroid gland. Radioactive iodine has been traced in the New York milk supply already.

Finally the operators realised what was wrong and turned on the emergency core cooling system. It was so hot in the reactor that the water flashed into steam (H_2O) which reacted with red-hot zirconium from the fuel casings to form zirconium oxide and hydrogen. The huge hydrogen bubble lodged at the top of the core, preventing the cooling water from circulating properly.

And what was going on outside the reactor? On Friday, two days after the radioactive steam had been released, pregnant women and toddlers were advised to leave the area because of the heightened effect radiation has on fast-growing children and unborn babies. People were advised to stay indoors and keep calm.

Despite this advice petrol stations were jammed with motorists filling their tanks and preparing to flee. Two hundred thousand people left the neighbouring districts without hanging around to wait for an evacuation order.

Back at the station, scientists had discovered traces of oxygen in the core. This meant the hydrogen could blow up at any time. They were left with the choice of releasing the highly radioactive hydrogen gas, together with other radioactive gases in the core, or waiting for it to blow up. They chose to wait, and it turned out to be a lucky choice.

If the core had melted down (which nearly happened more than once) it is estimated that a "plume of lethality" 110 km long would have formed downwind of it. Had this blown over Harrisburg tens or hundreds of thousands of people could have died of radiation sickness and countless others have contracted cancers or given birth to mutated children.

WHY WAS THE EVACUATION ORDER NEVER GIVEN? People were assured that if a meltdown started there would be 4–5 hours warning in which to escape. It would have been the world's worst traffic jam: panic-stricken drivers abandonning cars in heavy traffic; smashes etc. And if the hydrogen bubble had decided to blow up there would have been no "4–5 hours warning".

The utility which owned the reactor (power plants are privately owned in the USA) was reluctant to call for an evacuation because it would have had to pay costs. No one wanted a panic: even Jimmy Carter, in a pair of yellow gumboots, went into the control room to reassure the public about nuclear power.

The accident leaves many unanswered questions. What will be the effect on the nuclear power program in the aftermath of Harrisburg?

Even though a meltdown was averted (no one knows exactly how!) enough radiation was released to cause perhaps 20 cancer deaths by direct radiation and many more from radioactive build up in the food chain. People in Harrisburg are paying more for their energy now because it's being brought in from elsewhere. Their $800 million reactor may never operate again, and they may soon be paying for the company's court costs with their electricity bill, as well.

Anyone who doesn't like it and decides to move away will have trouble selling their house. No-one will want to live near a nuclear reactor now, particularly not near the 3-mile island reactor. The effects of this disaster could be far-reaching. The nuclear industry has been fond of saying that reactors cannot explode "like a bomb". They're going to have to think of something else now.

"I think that when the dust settles we shall find that there has been a serious accident in the reactor but that the effect on the environment and on people living around will have been very small indeed."

–Malcolm Fraser, quoting Francil Tommbs of the Energy Council of Britain.

–John Hallam & Barbara Hutton.

Swiss vote for Nuclear Power

A referendum seeking to give local communities in Switzerland control over whether nuclear reactors should be allowed to operate near them has been lost by a 1% margin.

The atomic industry spent 28 million francs on propaganda before the referendum. Anti-nuclear groups in Switzerland are not unhappy with the result: since World War II not a single referendum proposal has been accepted in Switzerland. The country is industrialized and has very limited energy resources: thus the 49% vote in favor of the proposal is seen as surprisingly high.

Another referendum to approve all reactors currently operating or under construction in Switzerland is to be held on 20 May. If accepted the proposal will give the atomic industry the right to drill on private property in search of waste burial sites. However the atomic industry will need a "yes" vote to win this one!

–from WISE Magazine 2nd AM.

A Nuclear-Free Pacific?

The Pacific has been used as a testing ground for French and US nuclear weapons, as a playground for nuclear submarines and site for military bases, and now it has been suggested that one of the Pacific islands should be chosen as an international dump for nuclear wastes. (And another island will presumably be allocated as the international "holding camp" for Vietnamese refugees.)

The Pacific people have put up with being used in this fashion for too long. Now they are gaining confidence and starting to organise. In 1981 the UN trusteeship of Micronesia and some other areas will end and these areas will at last become autonomous.

Genuikin (Japan Congress Against A- and H-bombs) is calling for a conference in 1980 in preparation for independence, to consider the condition of victims of nuclear explosions in Japan, the Marshall Islands, the Tahitian Islands and the US, and the degree of radioactive contamination of the environment. (It has been suggested that the study should extend to aborigines at Maralinga and NW Australia.)

It will also discuss action for the withdrawal of nuclear weapons deployed in the Pacific, report on nuclear power and reprocessing in the region and discuss ways to prevent the waste plant from being established.

Gensuikin is drawing attention to the rising incidence of leukemia and cancer among workers engaged in uranium mining, weapons testing and the nuclear industry – "nuclear energy is becoming a heavy burden on human society".

–from a report by Les Dalton.

Racism as an Australian Cultural Celebration

People watching the official Australia Day re-enactment of the founding of the colony of New South Wales in Sydney were curious when they noticed a huge red, black and yellow flag, clearly visible in the background. It symbolized Aboriginal Land Rights. The demonstrators who held the banner managed to stage a pointed protest against the official disregard for aboriginal rights, with only a handful of people (all of them white) and less money at their disposal – an example of what can be achieved with imagination and a lot of nerve. You don't need huge numbers to hold a demonstration!

After the official Australia Day ceremony was over some of the demonstrators were interviewed on television; asked why they were protesting and why no aboriginals had been present. The demonstrators replied that the Aborigines would have boycotted the ceremony, as they wanted no part in a ceremony which celebrates the beginning of their destruction.

The organisers replied angrily that there was *"No boycott. The Aboriginals simply weren't invited."*

Thus were the viewers of one Sydney T.V. news greeted with racism '79 style on Australia Day. The organisers of the official ceremony had invited descendants of the First Fleet (in period costume), prominant members of the Sydney establishment, high ranking army, navy and RAAF officers. They had organised speeches, a RAAF fly-past and a 21 gun salute but what they didn't seem to want was any mention of the fact that there were Aboriginal people in Australia when the country was "invaded" by the First Fleet. Nor, we think, was it up to Aborignals to correct this omission.

So, armed with a huge Aboriginal land rights flag in the form of a banner, a few placards and 200 leaflets we attempted to add a different perspective to the officially promoted patriotic bullshit, which conveniently (for fragile consciences) ignores what happened to the Aboriginals who objected to their land being claimed for the King of England. And, more importantly, to express how Aboriginal land rights continue to be frustrated and undermined.

Since the police wouldn't allow us in the roped off section we positioned ourselves on a grassy knoll directly behind the official platform. Our huge banner held up with a pole on either side, looked magnificent compared to the Union Jack which hung limp at the top of the flagpole in the still air. Apart from a few shouted comments at appropriate moments it was a very orderly demonstration.

The reactions we got from the people watching the lunch-time official ceremony ranged from strong support to violent antagonism. We made an effort to talk personally with people who reacted to us being there, and found that the antagonisms usually resulted from a complete lack of understanding of the land rights issue. This is not to say there weren't any out-and-out racists there, because there were; for those people to come to terms with their racism would raise many other contradictions in their values/life.

We feel we raised questions in some people's minds and had a large impact on the way Sydney T.V. viewers see Australia Day.

Kim O'Sullivan
Paul Marshall

How it was Done

We chose to protest at a well-advertised public event so that instead of putting out press releases and begging the media to come they would all be there covering the official "celebration", and we had a ready-made audience who would be sitting watching the official ceremony and listening to the speakers.

Next, to work . . .

a) We bought dowelling for poles from a hardware store,
b) We bought some cheap, cheap cotton material for the flag,
c) We sewed the flag – very easy – just two pieces of oblong material sewed together with a circle over the top.
d) We decided what points we wanted to make. These were:–
   – What *really* happened when white people arrived?
   – Land Rights: what they are and why they are important,
   – Who we are (to counter any misapprehension) and why we are here (i.e. what we were hoping to do by "upsetting" the official ceremony).
e) We bought and typed up a gestetner stencil. (Stencils can be made on any ordinary manual typewriter.) We bought a ream of paper (cost = $2.00).
f) We asked FOE (Sydney) if we could use their gestetner machine. They agreed and we ran off about 200 copies. (Gestetners are simple to use and most community centres have them.)
g) We had a meeting beforehand to decide our strategy. Decided not to verbally confront the people at the meeting but to stand in an obvious place, two of us holding the flag, while the others distributed leaflets. This is the only part of the "action" which in some ways fell down. Because we only had one meeting, just before we left for Macquarie Place we found that each of us had different expectations of what we were doing. Luckily we reached a compromise acceptable to all, but we would all advise at least two or three meetings, with all the people present who are to be there on the day to really thoroughly "sort things out".

It's all up to you!!

New Zewland Gives Nuclear Sub A Rough Welcome

Small boats and kayaks crowd into the path of the USS Haddo, nuclear hunter-killer submarine, as it enters the harbour at Auckland, New Zealand. One protestor made history by boarding the Haddo as it drove through the protest fleet at 7-knots, and stood waving defiance on the foredeck before being hustled below and arrested. Others risked being cut to pieces in the propellors as they attempted to stop the submarine from berthing. *"From my masthead I watched a small boat go under the propellor and for a second saw a gush of red . . . these memories are not easily erased."*

The Haddo, pelted with streaks of yellow paint, finally managed to berth at a wharf, 1000 metres from the city centre. Civil Defense spokesmen assured the public that in the unlikely event of an accident City Council buses would collect everybody and take them to safety. Later the bus drivers were indignant that they had not been asked in advance whether they would be prepared to do this!

– From an article by Richard Hudson in Auckland.

Blacks lose Ayers Rock

Aborigines of Central of Australia have lost their claim to Ayers Rock and the Olga Ranges, both places of strong religious significance.

Mr Justice Toohey, the Land Commissioner, was unable to grant land rights to the Pitjatjantjara and Yankunijatjara people (who still hold ceremonies at both sites) because the Government proclaimed the area as a National Park late last year.

The Central Land Council is angry because it says that the Government promised to "freeze" all unalienated Crown Land until Aboriginal land claims had been heard. It broke this pledge by proclaiming the "Uluru National Park".

Significantly, the Park legislation was not brought before Parliament (the usual practice) but was quietly announced in a gazette.

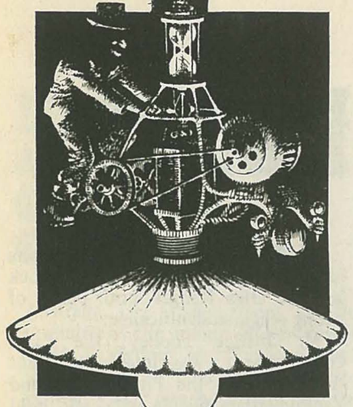
Although Ayers Rock and the Olgas are now part of a National Park arrangement for taking tourist busses into the area and allowing people to climb over Ayers Rock remain unchanged. The decision to withhold land rights will please the Northern Territory Government, motel owners near Ayers Rock, the tourist industry and local pastoralists, all of whom opposed the Aboriginal land claim.

– from reports in the Melbourne AGE, and "AM" 5/4/79.

Insulation from Wastepaper

For the first time Tasmania has a viable paper recycling venture. A company is actively involved in recycling treated newspaper as insulation for homes, and C.S.I.R.O. tests have shown it to be fireproof and a better insulator than glass-wool products, which are also notorious for penetrating human skin and tissue. To date 300 houses in Hobart have been insulated with the recycled newspaper insulation.

The newspapers are purchased from various charities and from the Australian Paper Manufacturers company in Tasmania, which would otherwise ship the stuff to Melbourne to be reprocessed into newsprint and sent back with much waste of energy to Tasmania. The paper insulation is available from "Comfort Seal", Connors Road, Cygnet, Tasmania.



Solar Energy Today ..... or

maybe next year .....?

Hundreds of solar cells glinted in the sunlight, heated water poured continuously from numerous water heaters, cooled air flowed ceaselessly from solar air conditioning devices. Numerous systems performed a multitude of functions, and all from the sun.

In an adjacent building over 400 people listened intently as the man before them expounded the success of his country's research into solar pumping installations.

People had come from all over Australia, in fact all over the world, to attend the Victorian Government's "Solar Energy Today" Conference, held at Melbourne University. And on their lips was one topic . . . Solar Energy. For four days in March they listened and conversed . . . they examined solar technology as it is today.

Why then was the whole thing labelled as a publicity stunt? Maybe because it was. The timing of the conference was such that it took place close to the May election. The cost of attendance, $125, limited attendance to those who were well off. This was reflected in the people who attended, many of whom were company executives.

Perhaps the biggest fault was that it dealt with only "nuts and bolts issues" – the technology of solar energy, not with real problems of adoption. The fact is that solar energy is a feasable alternative now in many applications, (notably water heating). The problem is to get industry and government to adopt solar energy on a significant scale. In this area the conference did nothing.

Throughout the conference Friends of the Earth ran a counter conference which in contrast to Mr Hamer's conference was free. This event included displays, films, speakers and publications available for sale. It concentrated on the social and political aspects of solar energy, and provided an alternative to the essentially technical approach of the main conference. This was well received by many of the conference delegates and members of the public.

The government's Solar Energy Today Conference was only useful in that it helped educate and increase awareness on solar energy. Otherwise it only repeated what is already known. If the government were serious about solar energy it would stop concentrating on impressive displays and start playing an active role in research and development.

Mick Harris.

Solar Cells; Getting Cheaper!!

It's a shame that some of the $600,000 budget of Mr Hamer's Solar Energy Research Committee has not found its way into research into Solar Cells. Instead the money is used in administration, advertising and flashy displays, while little or none goes into actual research. This is unfortunate as Solar Cells, (Photovoltaic Cells), hold real promise as a decentralised energy source for the future.

Solar Cells produce electrical energy directly from the sun with no polluting or wasteful byproducts. They have no moving parts, which means they potentially have a very long life.

Their major problem is that they are very expensive. In fact so expensive that until recently they were mainly used for extraterrestrial applications such as in the various moon missions.

However the prices are dropping. For example in 1975 you could be expected to pay over $300 for a 12 volt, 7 watt array. Today you could purchase a similar array for around $250.

Costs are likely to continue to drop. By 1985 prices of less than $30 for a 12 volt array could be a real possibility.

The reason for the present high prices are the current production methods in use.

How They Are Made

At present most cells are made from a large crystal of purified silicon. This crystal is cut into very thin wafers by a diamond saw. A special surface is prepared on one side of the wafer. The cell is then cleaned and electrical contacts attached.

The whole process requires exceptional cleanliness and exactness. The work is labour intensive and is done with expensive precision equipment. All this adds up to one thing . . . high cost.

Cost Reduction

Three factors are likely to cause a drop in costs.

1. More efficient cells can be produced.
2. Production costs can be reduced.
3. Light can be concentrated to increase output.

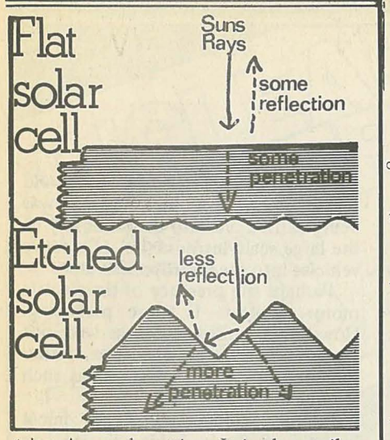
Greater Efficiency

The advantages of producing more efficient cells are generally outweighed by the increased costs. However one improvement in efficiency which may not be too expensive to be of use involves etching the surface of the cell to form little pyramids. These result in the cell absorbing more light and thus producing more electricity.

Cheaper Production

Cheaper methods of production hold the most promise for reducing costs.

One such method involves drawing a silicon strip up between two sides of a graphite die. This produces a long strip, removing the need for wasteful



trimming and cutting. It is also easily adapted for mass production techniques, which also brings costs down.

Another method of cost reduction involves a cell type called Metal-Insulator-Semiconductor solar cells. Work is being carried out on these cells at the University of New South Wales. The major advantage of these cells is that they have a structure that does not require a p/n junction, (a junction between two different types of silicon). Another advantage of these cells is that a lower quality silicon can be used.

It is now possible to make silicon cells from large polycrystalline ingots. These are larger than those produced by the conventional method, and can be made in a square shape thus reducing wasteage.

A vapour deposited film of silicon on an inexpensive backing is another approach to price reduction. This method of production can be integrated with the silicon purification process. It can also simplify other aspects of production.

Concentrating Light

The third major method of reducing costs of energy from solar cells involves concentrating more light on the cells surface area. The major methods of focusing is by the use of parabolic reflectors or fresnel lenses.

A major problem with this method is that the more sunlight you concentrate, the hotter the cells get. As the cells get hotter the output drops, and some form of cooling is often necessary. This is generally achieved by passing water over the back of the cell or mounting materials.

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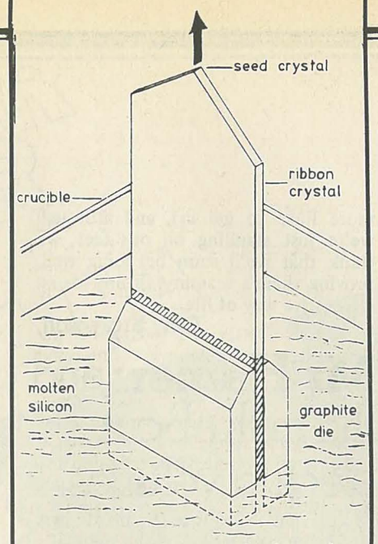


Thin ribbon growth of crystal silicon using a graphite die.

Source: Electronics Australia, Jan. 1978.

Solar cell technology is progressing at a moderate rate. The technology is available to produce much cheaper solar cells. But with the present situation the development of this technology will take time. Manufacturers will not invest in mass production techniques or research until they can see high sales to pay off their investment. High sales will not occur until prices drop. So a self reinforcing cycle is set up.

The government is the body with the money and the responsiblity to break this cycle. Industry won't unless it can see a clear profit. So reducing costs becomes political and politicians won't act until pressure is placed on them. So to put it simply things are happening but they could be happening quicker.

Mick Harris.

We are "Going Solar".

For a long time I've been interested in social and environmental issues, as well as technology and design: so I became very interested in alternative technology and self sufficient lifestyles . I started playing about with alternative energy sources (solar, wind, etc) and became involved with the Melbourne-based Alternative Technology Co-operative in 1977.

I started to develop a pipe dream: having a workshop where I could work on, and build Alternative Technology equipment. A friend said that he would like to set up some kind of Alternative shop. So we worked together on the long task of finding the right site. After several months, we found a historic building near Melbourne's Central Business District and the Victoria Market. This became our shop.

We registered the business name: "GOING SOLAR", and with the help

of friends, started building shelves and benches out of old packing cases and scrap timber – our finances were rather limited.

After twelve months of trading we've packed our display area with books and equipment for self-sufficiency and alternative energy. We're at the point where we'll have to move to larger premises before the end of 1979. But our task has been very difficult. We've worked very long hours, and only make enough money to cover the rent and other expenses, but it's comforting the way so many people encourage us and tell us we're on the right track.

As the name GOING SOLAR suggests, we retail solar energy equipment. This includes solar flat plate collectors, (for water and air heating); solar cookers; solar food dryers; and solar ovens. Also under HEATING SYSTEMS, we sell slow combustion and pot belly stoves.

Under ELECTRICAL AND PUMPING SYSTEMS, we buy and sell wind generators; solar silicon cells wave generators; hydro electric systems; hydraulic ram pumps and wind pumps. We also stock all the accessories: batteries, inverters, lights, towers, etc.

AGRICULTURAL EQUIPMENT includes: Glasshouses, hand tools, bee keeping supplies, terra-cotta pots, mushroom spawn, a range of NEW GIPPSLAND and THOMPSON & MORGAN seeds, a range of unusual fruit & nut producing trees, and for pest control: garlic spray, fly strips and blow fly traps.

For the home builder (SHELTER & CONSTRUCTION) we have mud brick moulds and presses (the DALRAC Ram), ALPINITE natural seagrass insulation, NOVA low water use shower heads, and hand tools.

Under FOOD & COOKING we have storage jars, FOWLERS preserving outfits and accessories, stone flower mills, grinders, bread tins and yeast.

Finally, we also stock some CRAFT items: spinning wheels, looms and paper making kits (using waste paper).

Now that the shop is starting to get set up, we have time to develop and build equipment, and repair old equipment in our workshop. There's still a lot of work to do (and a lot more lines to get in), and although we're just standing on our feet, we think that we'll soon be going well, proving there's a sunny future for an alternative way of life.

Tony Stevenson.

Mr Hamer: and the truth about electric vehicles.

You may remember the time when Mr Hamer, (perfector of the publicity stunt), could be seen in several papers riding on an electric motor scooter with a big grin on his face, saying how his government was looking into the use of electric vehicles in its progressive approach to transport alternatives.

Well the truth of the matter is the Victorian Government has a grand total of one electric car as well as a number of electric motor scooters. The electric car is an Enfield 8000 City car, made in England by a company which, since the car's purchase, has ceased to exist.

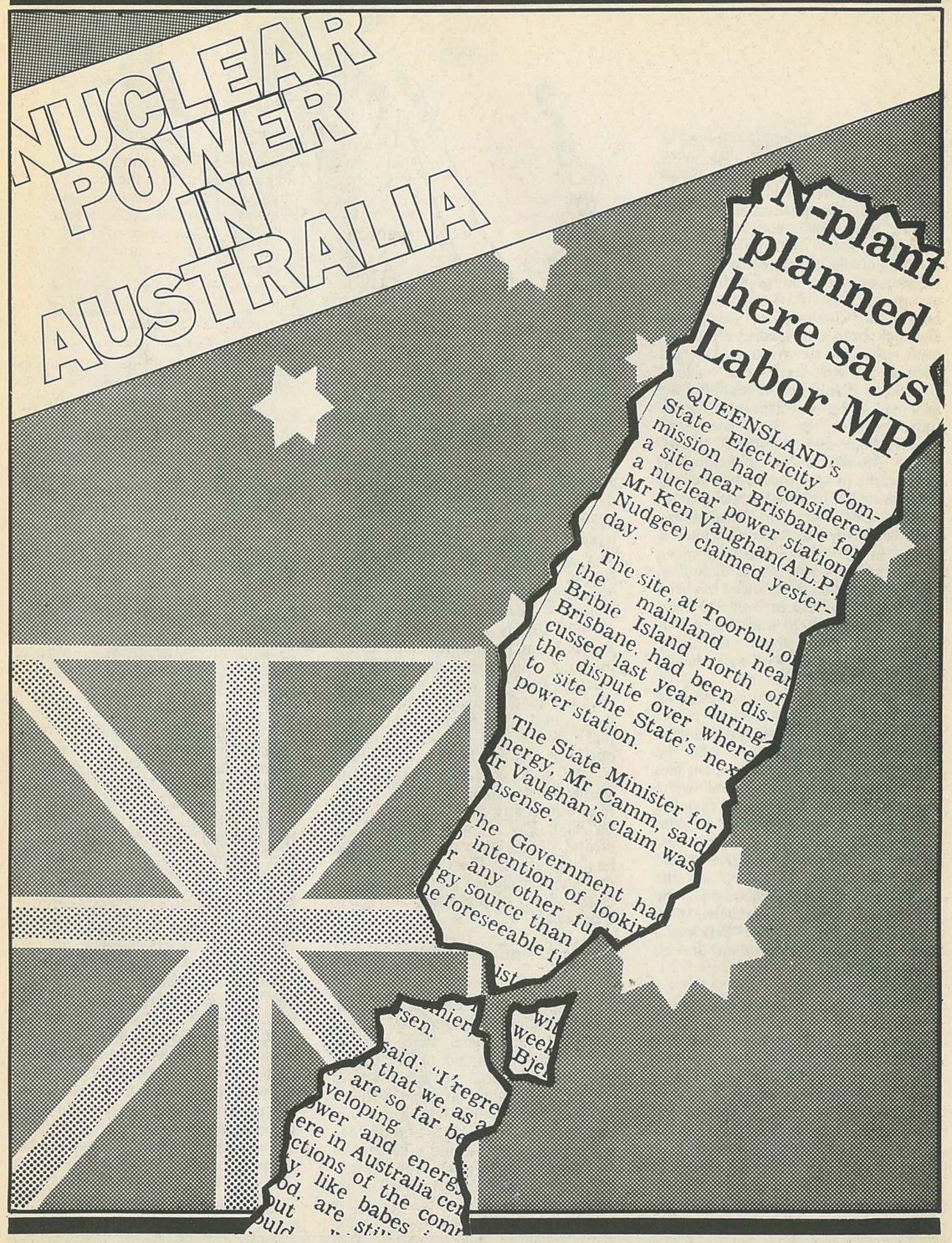
The research carried out on this car was confined to improvements on the control system. As far as I could make out no long term research was being carried out into the feasibility of the large scale introduction of electric vehicles into the metropolitan area.

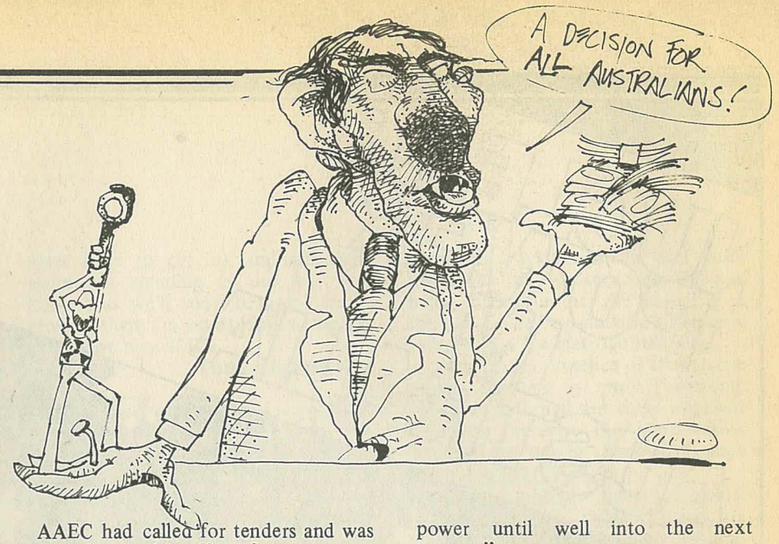
Perhaps the presence of the electric motor scooters is more promising. However it turned out these were not commuter vehicles but were rather intended for use in closed areas such as large industrial plants.

As it turned out the most impressive work being carried on electric vehicles is being carried out at the Flinders University of South Australia. Here a Fiat 127 has been converted to electricity with impressive results. The project is being supported by the South Australian Government and the Australian Electric Vehicle Association.

So it seems Mr Hamer's claims of action on electric vehicles were only hot air. His government was responsible for the purchase of one car and some motor scooters, but apart from some low-key research this is where it ends. These electric vehicles seem at the moment to be of more value as a token gesture for press releases and newspaper articles.

Mick Harris.





In the last few years the anti-nuclear movement in Australia has been absorbed in a hard-fought campaign against uranium mining to such a degree that the prospect of nuclear power itself has received minimal attention. Since 1974 Government plans to introduce nuclear power have scarcely been mentioned in the press, except in Western Australia, which boasts Sir Charles Court and Lang Hancock; both keen media performers, both eager to see Western Australia become the first state to go nuclear.

But we should not be lulled by the lack of press coverage. It merely indicates that the State Electricity Commissions and the AAEC (Australian Atomic Energy Commission) have learnt to keep quiet when dealing with journalists. Several state governments are currently investigating proposals for introducing nuclear power in the 1990s. The time taken to get nuclear power plants operating, once the decision to go ahead has been made, is 15 years. In order to have nuclear power in the mid '90s, power authorities must start preliminary work now, if they have not already done so.

The time to start campaigning against an Australian nuclear power program is *now*, before governments become irreversibly locked into the idea; before more money is spent and the public has become resigned to the idea. Experience has shown that the chances of stopping a project are slim once the government has given the green light and construction has begun. The Newport power station and the F19 freeway in Melbourne, the Molongolo Arterial in Canberra (now euphemistically called the "Parkway") and the Lake Pedder dam are all examples.

Jervis Bay – the beginning

The first firm plan to build a commercial reactor in Australia was announced in 1969. The 500 MW reactor, to be built at Jervis Bay in NSW would have been a prototype, first of a wider nuclear program. In 1971 the then Prime Minister, William McMahon, deferred the project indefinitely, mainly because of its cost, but not before preliminary work had reached an advanced stage. The AAEC had called for tenders and was considering 14 offers from overseas reactor suppliers. It had already made extensive excavations and built a high-grade access road to the site. In 1975 when the matter was discussed again in parliament it was revealed that the AAEC still did not consider that the plans to build the Jervis Bay plant had lapsed. A defence department official also admitted that "people were casting their minds forward" to the possibility of extending the base to include a nuclear submarine facility.

NSW already has a nuclear reactor at the Lucas Heights Research Establishment – an experimental "HIFAR" reactor, tiny by world standards. It does not supply power to the grid but it is useful for studying the nuclear fuel cycle and training reactor operators. Research into enrichment is also done at Lucas Heights, and among other things it has a tourist reception centre with a glossy display on Jervis Bay, showing how environmental studies were done on the site: its suitability etc. There is no suggestion that the scheme has been abandoned: in the minds of the AAEC Jervis Bay is not dead.

Victoria – nuclear by 1995?

In April, just before the Victorian state elections, the premier Mr Hamer unveiled the Liberal Party Energy Policy, and attempted to lay to rest any rumours about nuclear power in Victoria. He said that there were no uranium reserves in Victoria and that the coal-fired Loy Yang Station, due to open in 1993, would take care of the state's power needs. His Minister for Minerals and Energy, Mr Balfour, went further and said that the state had "no need to think about nuclear power until well into the next century".

This seems a logical position to take. Victoria has plenty of cheap brown coal and nuclear power would not be an economic proposition. However plans for a coal-to-oil plant in the Latrobe valley could change the whole situation. Victoria does have uranium reserves near Mansfield, as the Government well knows (it issued the exploration licence).

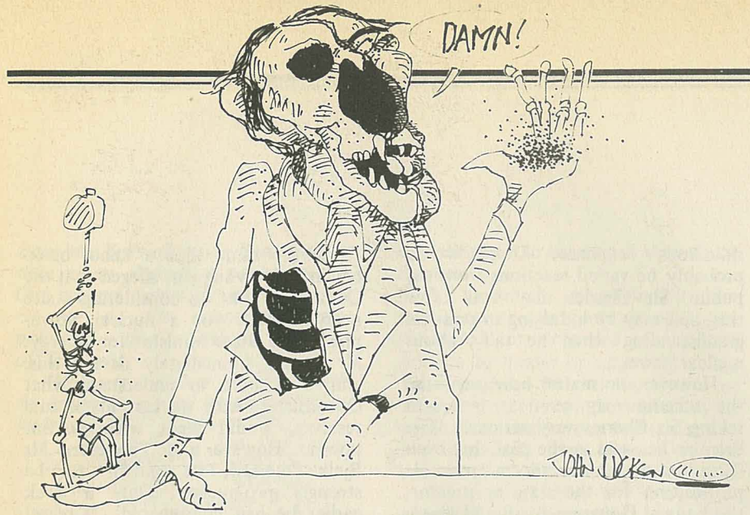
Although press reports indicated that the state Liberal Party policy "rules out the use of nuclear power in Victoria for at least 25 years" this is nowhere stated in the Policy. All it says is that nuclear power will not be economic *"in the foreseeable future"* and will not be considered until there is "a satisfactory resolution to all technical, economic and environmental questions" – both very vague statements. The Liberal Party has made no commitment against introducing nuclear power (in contrast to the ALP and Australian Democrats, in fact it still considers it the main alternative source of power in addition to Loy Lang.

According to the Victorian Government Green Paper on Energy (1978);

"A nominal allowance has been made for the installation of a 1000 MW nuclear station to supply base load electricity. It is assumed that this station would be installed by 1995 and could be followed towards the end of the forecast period by the erection of other nuclear stations."*

Nuclear power may not be economically feasible even in 1995 – that is the main thing which can be gleaned from the Liberal leaders'

* 1000 MW are enough for about one million people, give or take a few thousand.



statements. In any case the economic details are likely to be left to the SEC to work out.

In 1972/73 the SEC of Victoria carried out its first study into the economics of nuclear power: a battery of six 600 MW nuclear reactors was compared with a battery of coal-fired plants designed to deliver 4000 MW of electricity. The study concluded that if the nuclear plants were built near Melbourne, thus cutting down on the loss of power due to transmission over long distances the nuclear stations would be only 2% more expensive than the coal-powered battery, which would have to be sited in the LaTrobe Valley. And labour costs would be lower. *"Nuclear fuel manufacture is more highly capitalised than even fully-mechanised open-cut coal mining, and as a result is less susceptible to future labour cost escalation."* Less need to employ workers and pay wages! Certainly a plus in the eyes of the SEC.

In 1974 a *"first nuclear unit for service in Victoria in the late 1980's"* was predicted as a possible alternative to completing the Loy Yang project. But when the SEC presented a revised set of figures (updated in 1974/6) to the Joint Parliamentary Public Works Inquiry into Loy Yang the nuclear option was rejected, on the grounds that at that stage it was slightly more expensive than coal, and the SEC lacked operating experience.

The nuclear option has been deferred, but not scrapped. According to Mr Balfour, speaking in Parliament in November 1978, *"Nuclear energy is likely to be the main alternative to brown coal for electricity production in the 1990s and beyond, depending on the extent to which brown coal is devoted to the production of gas and liquid fuels for transport and heating".*

The Victorian Government is planning a major coal-to-oil conversion plant which would use up substantially more coal than the SEC's total current consumption, thus cutting reserves by more than half.

It now seems that the SEC has recognised that nuclear power is not economically comparable to coal in Victoria. However if coal-to-oil conversion does go ahead on the scale envisaged it will create enormous air pollution in the Latrobe Valley (which already has a permanent smog pall).

The SEC considers nuclear power to be a "clean" source of energy because it causes nothing like as much air-pollution as coal, and may introduce it *on environmental grounds.* It also speaks of "conserving" coal by introducing nuclear power. In fact there would be no real conservation – consumption would continue to grow at its present alarming rate, but nuclear power would be introduced to supplement coal in meeting the "demand".

There is much confusion as to where the nuclear stations would be sited. In 1969 the Victorian Government proposed four sites: Tyabb East, French Island, Werribee and Western Lakes.

According to Mr Balfour the SEC has investigated *"all the nuclear power plants offered commercially in the Western world"* and had considered sites between the 90-mile Beach and Portland, along the Victorian coast.

The SEC has been *"keeping abreast of nuclear developments, particularly in respect of nuclear licencing and regulatory procedures".* Mr Balfour predicts that seven of the 15 years required to build a nuclear power station would be taken up with preliminary investigations, licencing etc. It seems the SEC is doing as much of this as possible before it gets the go-ahead from the Government, so as to save time afterwards.

> SEC officials also claim that WA would be a far better focal point for Australia's nuclear industry because, unlike the Northern Territory, there would be no great problems with Aboriginals.

Western Australia

"Sir Charles said he thought environmentalists had 'had their day' and their influence would be on the decline even in opposing nuclear energy projects. 'Wait until people start suffering brown-outs and other shortages . . . '"

– Perth Daily News, 2/6/78

During his trip to Europe and the USA in June, 1978, Sir Charles Court first unveiled the grand scheme – a 1000 MW nuclear station to be built by 1995, at a site which would be announced "soon". The AGE (19.6.78) mentioned a site 80 km from Perth as a possibility; the AUSTRALIAN's figure was 100km from Perth. The AUSTRALIAN added *"SEC officials claim that Western Australia would be a far better focal point for Australia's nuclear industry because, unlike the Northern Territory, there would be no great problems with Aboriginals" (–Australian, 19/6/78).*

Sir Charles said he hoped the Yeelirrie mine would be in action by 1982 and uranium from the mine would be processed in Western Australia as fuel for the nuclear plant. He said that planning would begin immediately.

But what would Western Australia, with its small population, do with 1000 MW of electricity, doubling its present capacity? Who will pay for the station? Where will the wastes be dumped? These were some of the questions the Premier, Sir Charles, has refused to answer. It seemed that the plan was sprung unexpectedly on the Federal Government – only a fortnight earlier Mr Anthony, Minister for Energy and Natural Resources, had been saying that there was no talk of even considering such a plan.

West Australia could not possibly use the electricity produced by the plant for its domestic market. Even if

there were sufficient demand, the power grid could not cope with it. Why, then, build the plant?

It has been suggested that Sir Charles Court may intend to use the power plant to provide cheap electricity for the aluminium industry industry is already engaged in mining bauxite (the raw material of alumina) in the midst of Western Australia's endangered Jarra forests, with Court's blessing. Aluminium production is enormously energy-intensive. Already a third of the alumina plants in Japan have been closed due to the scarcity of cheap power there. The same factor is closing down refineries in the USA (*Australian*, 2/6/79).

If WA is to produce its own nuclear fuel (as Sir Charles claims) it will need an enrichment plant, and these plants can use enormous amounts of energy (depending on the technology used). Another possibility is that the plant will be built in the Pilbara and used in connection with iron-ore extraction.

Energy costs in West Australia are among the highest in the country, and this could provide further justification for introducing nuclear power. The high cost of permanent waste disposal is a consideration which is beginning to weigh ominously in the minds of overseas authorities. Sir Charles is not, however, markedly concerned. In fact, he would be happy to see nuclear wastes buried in WA.

I am not suggesting that nuclear power really would be a realistic economic proposition for the West. A nuclear power plant would involve ridiculous expense. There would probably be varied reactions from the public. Sir Charles may well know this, and may be indulging in political grandstanding when he talks about nuclear power.

However, no matter how grandiose the scheme may seem it is worth taking Sir Charles very seriously. The Premier has said in the past that even if nuclear power was *not* an economic proposition for the state at present, the Federal Government should give a subsidy to allow it to be introduced. A nuclear plant in his eyes would be enormously prestigious, adding to West Australia's go-ahead "State of Excitement" image. After all, Sir Charles Court is the Premier of West Australia, not us.

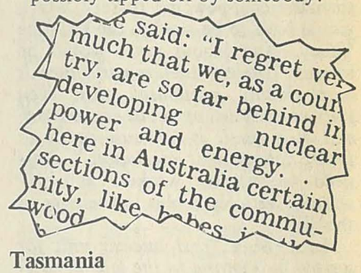
Sir Charles is not the most vocal proponent of nuclear power in the West. Lang Hancock, mining magnate and leading figure in the business world, has gone as far as to advocate nuclear blasting on the North West coast of Australia to build deep water harbours, and has volunteered to store nuclear wastes in his backyard. By contrast Court is a nuclear dove.

Queensland – babes in the wood?

In April the Queensland Government announced, unexpectedly, that there were plans for a joint French-Australian venture to mine uranium near Townsville. The State Government was also putting in a bid for an enrichment plant.

At the same time a Labor backbencher, Mr Vaughan, alleged that the Queensland SEC is considering a site near Brisbane for a nuclear power plant. The State Minister for Energy, Mr Camm, immediately denied this, and it is hard to understand what Queensland, with its vast black coal reserves, would want with nuclear power. However the premier, Mr Bjelke-Petersen, is known to be strongly pro-nuclear. Only a week earlier he had commented: *"I regret very much that we, as a country, are so far behind in developing nuclear power and energy . . . certain sections of the community, like babes in the wood, are still arguing about whether we should mine our uranium and use nuclear power."*

Back in about 1973 Bjelke-Petersen was quoted as saying that a nuclear explosion should be set off in the Barrier Reef, to halt the progress of the Crown of Thorns Starfish. Fortunately, the starfish seemed to have slackened off of their own accord – possibly tipped off by somebody!



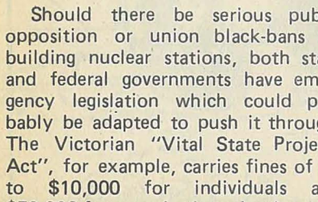
Tasmania

No word of nuclear blueprints has come from Tasmania. It seems to be content with an oversupply of hydro-electricity. However there have been suggestions that nuclear power should be introduced, as shown in an article in the *Hobart Mercury* (22/2/74) entitled "Nation's Brains Hit Hobart".

"Hobart Airport was hit by a sudden storm . . . a brain storm . . . when the bulk of Australia's scientific knowledge arrived aboard a TAA flight – in the form of 204 members of the Australian Institute of Nuclear Science and Engineering . . ."

Their president, Sir Ernest Titterton, professor of Nuclear Science at the Australian National University commented: *"Australia's use of nuclear energy for some time will be along the lines of anti-pollution rather than as an alternative power source. Our present electricity supply system is one of the country's biggest pollutors – that is, with the exception of Tasmania.*

"However, nuclear energy would no doubt be a good back-up for your hydro-power".



Unfortunately we have no way of knowing exactly what the AAEC and the State Electricity Commissions are planning: there is no access to files at the AAEC and even access to the SEC library is somewhat restricted: as a librarian explained apologetically, the SEC has "had a lot of trouble with Friends of the Earth people coming in".

However public statements made by several Liberal and NCP leaders give the impression that in Government circles it is generally taken for granted that nuclear power will be introduced to the country some time this century: the only remaining question is how soon. There has been little provision made for other source of power after 1995.

The likely sequence for introduction of nuclear power would be as follows: uranium mining – enrichment – nuclear power.

It is widely believed that by enriching uranium, Australia can add to its export value. However building an enrichment plant is an expensive undertaking and the plant would have to be used to its maximum extent to ensure financial viability*. This would strengthen the case for using it to enrich fuel for an Australian nuclear program.

Should there be serious public opposition or union black-bans on building nuclear stations, both state and federal governments have emergency legislation which could probably be adapted to push it through. The Victorian "Vital State Projects Act", for example, carries fines of up to $10,000 for individuals and $50,000 for organisations that boycott or endeavour to boycott a Vital State Project.

A "boycott" is defined in the legislation as any "acts or omissions calculated or intended to induce anyone to hinder or obstruct" a vital state project. This definition is so sweeping that it could conceivably be applied to handing out leaflets; speaking in public; even writing to the papers to object to the station opening.

On top of this, any person or organisation who succeeds in carrying out a boycott is liable for costs (these could be millions of dollars in the case of a power station), and it is illegal for anyone to help with paying these or the fines (minimum penalty: $1,000 fine). So much for appealling to supporters for help. The Vital State Projects legislation was first introduced to intimidate workers who were boycotting the Newport power station, but it could be applied to any kind of power plant.

It is possible that the States are still overestimating their rates of growth, and that fossil fuels will last for centuries. However if energy consumption continues to rise unchecked, if Governments continue to court energy-intensive industries such as aluminium processing and uranium enrichment, if massive coal-to-oil conversion plants are established, and if nothing is done to conserve energy or develop alternative power sources, we are going to run out at some stage. The only alternative to nuclear power by that stage could indeed involve "brown outs and shortages".

We must press for:

- an IMMEDIATE reversal of research priorities from nuclear power to solar and other benign forms. At present the Federal Government still spends many times more money on nuclear research than on solar etc. At this rate, alternative forms may never be able to compete with nuclear. Australia will become a late starter in the nuclear race, instead of a leader in the solar field.
- measures to conserve energy should be introduced straight away. Some suggestions: a Government loan to allow people to insulate their homes at no cost to them, and pay it off from energy savings; compulsory insulation in all new buildings (possibly a loan should apply here too);
- financial measures/regulations to encourage industry to get rid of inefficient and energy-intensive machinery and re-use waste heat.
- we should conserve petrol. Some ways of doing this include: financial incentives to encourage people to drive smaller cars; lowering speed limits; allowing car-pooling; most important, improving public transport.

If you have access to any further information, or wish to comment on this article, please write to: Chain Reaction Collective, 366 Smith St, Collingwood 3066, without delay.

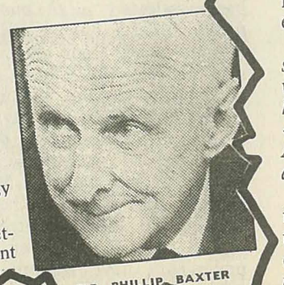
– Barbara Hutton

PLANT 'FIRST STEP' TO N-BOMB

A $1200 million uranium enrichment plant planned by the Federal Goverment would be the "first step" in giving Australia the ability to build nuclear weapons.

Former head of the Australian Atomic Energy Commission, Sir Philip Baxter, said this today.

The plant would be [illegible] making the [illegible] sion had advocated setting up the enrichment plant three to four yea[illegible] ago.



SIR PHILLIP BAXTER

1990s tip for first N-power

The S[illegible] Feb. 28, 1978—Page 17

From GEOFF WALSH

CANBERRA. — Australia should keep open its options on domestic nuclear power, a report on energy policy has recommended.

This could lead to the wind and wave power as country's first nuclear power sources. reactor starting in the early 1990s.

These, and geothermal and oceothermal power and, the report said, generators, were more energy would not be costly to develop than mic in the foresee- coal or nuclear plants. ture.

"In these circumstances, it is considered unwise and misplaced to commit large resources to these exotic forms of energy," it said.

report by the Aus- n Institution of En- rs energy task force, federal and state nments should draw a nuclear energy pro- n for Australia.

Although solar energy would not be economic in the foreseeable future it should be used [illegible]

task fo[illegible] cted

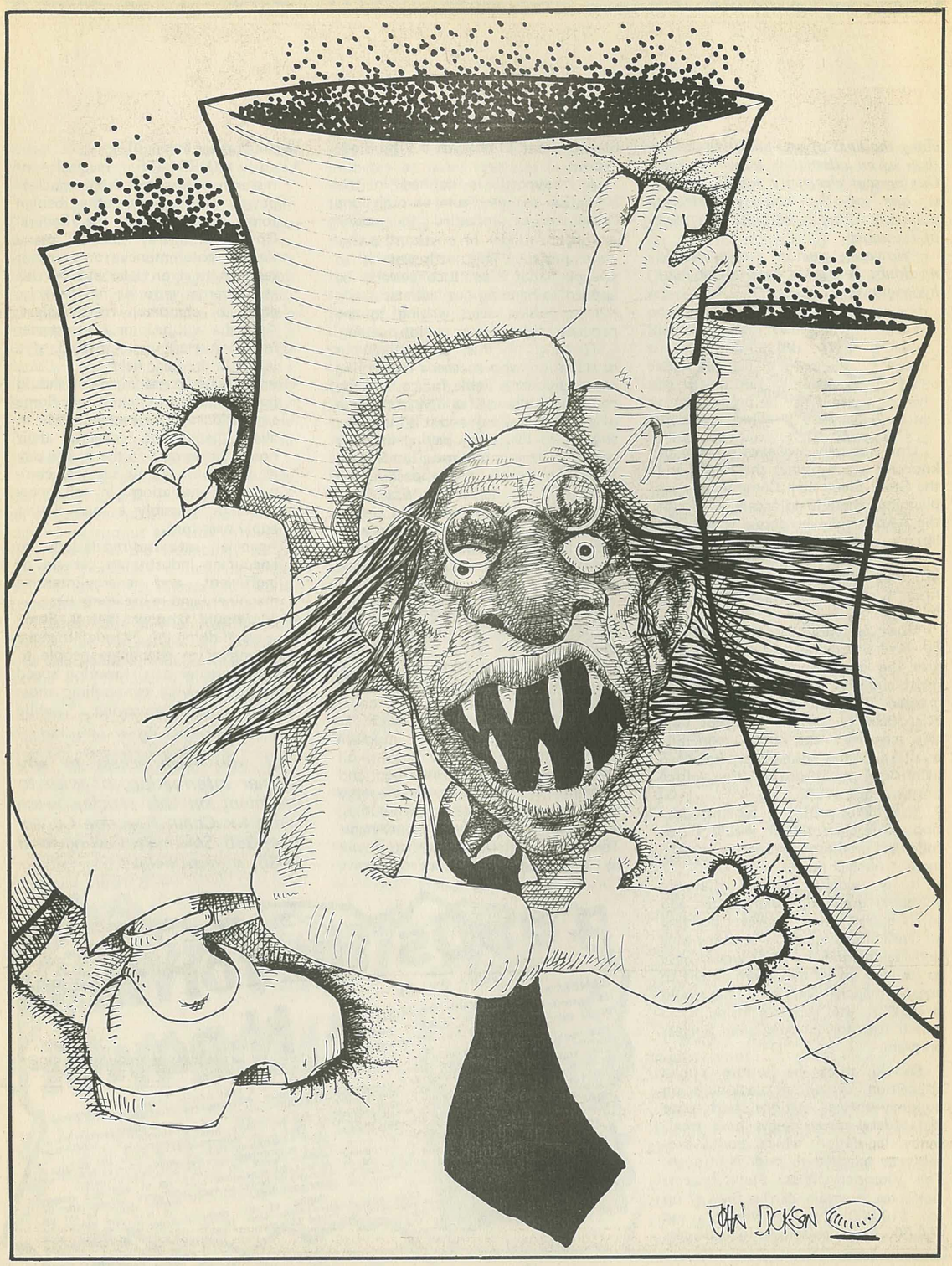
possible as a heat source to replace oil and gas, the report said.

The task force, headed by Prof L. A. Endersbee, Dean of Monash University's engineering faculty, started work in 1975. About 100 specialists on energy and power sources, were consulted.

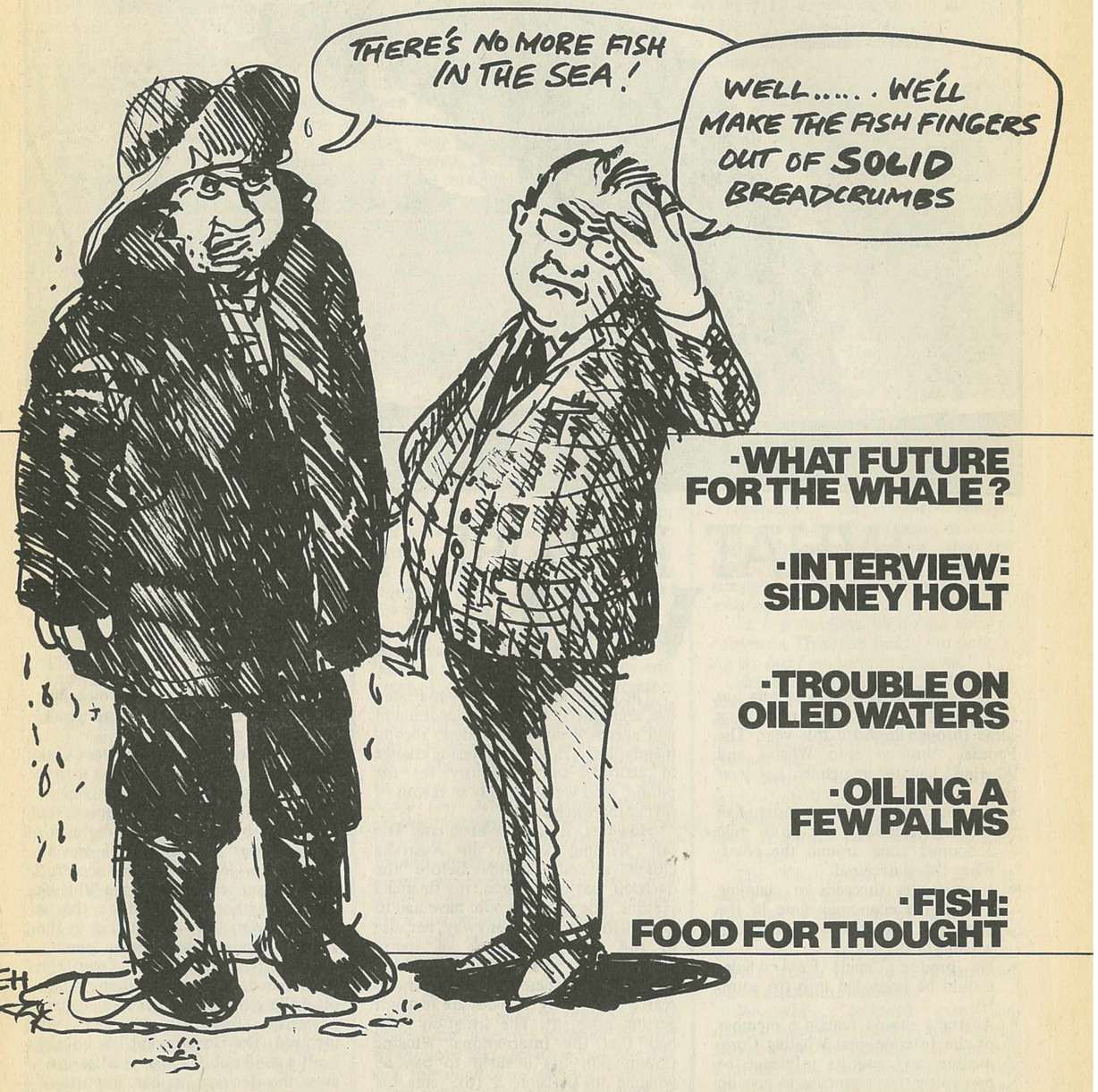
Copies of its report have been sent to the Prime Minister, Mr Fras- and state pre-

Other recommendati included:

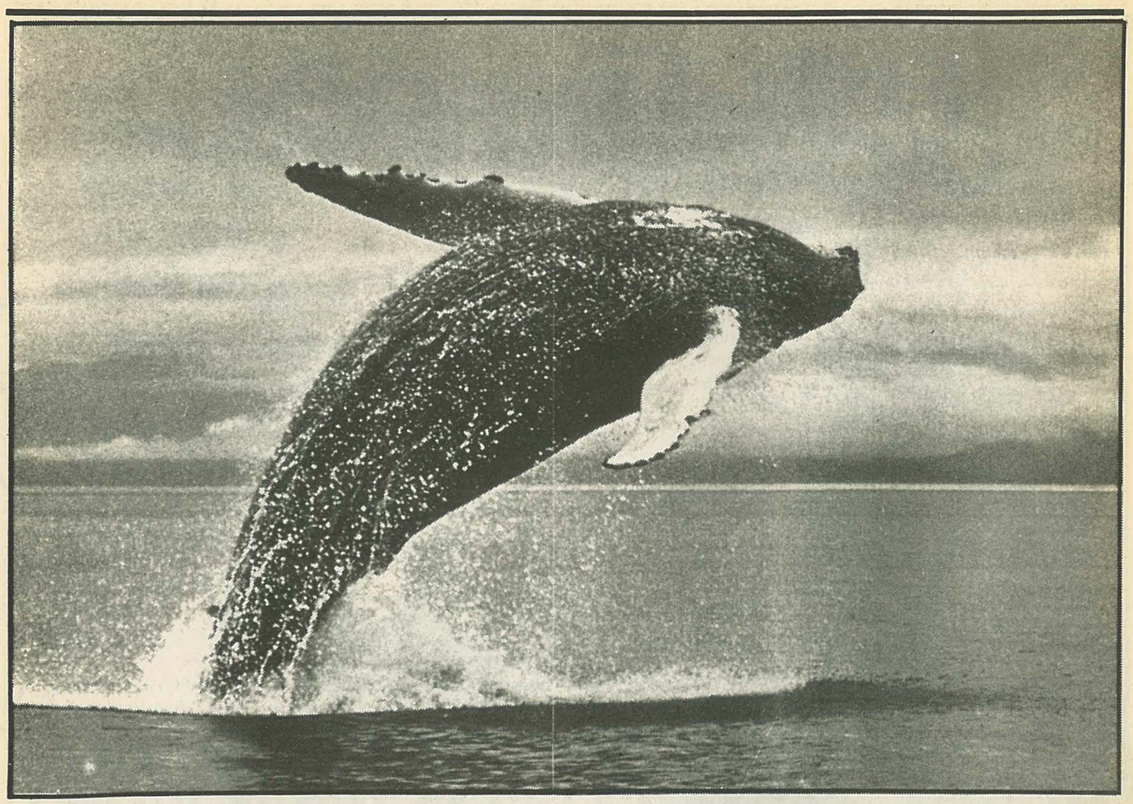
- Solar energy resear should be substantiall upgraded.
- Plans for making li- quid fuel from coal should be prepared.
- A national energy advisory service for industry should be set up.
- Gas and electricity authorities should give the lead in wise use of energy.
- Fuel ec[illegible]y goal [illegible]ld be



THE THREAT TO OUR OCEANS



- WHAT FUTURE FOR THE WHALE?
- INTERVIEW: SIDNEY HOLT
- TROUBLE ON OILED WATERS
- OILING A FEW PALMS
- FISH: FOOD FOR THOUGHT



WHAT FUTURE FOR THE WHALE

The good news that Australia has finally put a total ban on whaling came through in April this year. The Federal "Inquiry into Whales and Whaling" had recommended last year that

- Whaling be banned in Australian waters, including the 200 mile economic zone around the coast, when this is declared,
- If Australia succeeds in claiming a 200-mile economic zone in the Antarctic it should attempt to ban whaling within it,
- No products made from whales should be imported into the country,
- Australia should remain a member of the International Whaling Commission and use its influence to persuade other countries to give up whaling.

The Prime Minister, Malcolm Fraser, has announced that the Government will accept every one of these recommendations. This is an amazing change in attitude and a victory for the public, who were strongly in favour of saving the whales.

However, it came a little late. The last whaling station in Australia closed several months before the decision was announced, for financial reasons. The station would have had to close within the year anyway, because of the dramatic decline of sperm whales in the seas off Western Australia. Males in these waters are now so scarce that many females are just not getting pregnant. The situation is so bad that the International Whaling Commission has decided to ban all whaling in Division 5 (the area off WA) indefinitely. Even with this ban, the numbers are likely to go on falling for some 10 years, till more young males reach maturity.

As the only nations that were at all likely to seek a whaling quota in seas off the Australian coast are members of the IWC, and have accepted the whaling ban, the Government's decision was not a painful one to make. The Government has accepted every recommendation of the Whaling Inquiry without reservation: this is very different from its reaction to the Ranger Inquiry into uranium mining, or its attempts to water down the recommendations of the inquiry into oil drilling on the Barrier Reef, where powerful financial interests are involved. The Government has bought itself a good public image at little cost: even the decision to ban imports of whale derivatives will have minimal economic impact, as whale products are increasingly phased out by the countries we trade with.

The whales off the Australian coast have been protected, but not till they were in decline. This is typical of the International Whaling Commission's performance in the past: time and again it has waited till whale species had been massively over-killed before stepping in.

To understand why, it is necessary to realise that the International Whaling Commission is not a United Nations organisation with wide powers to control whaling. It's a voluntary club, formed by whaling nations when they realised that they were killing the goose that lays the golden egg, in an attempt to keep whales from extinction. Over the course of time there has been some change of attitude – it is now accpeted that whales should be protected before they are seriously endangered, rather than pushed to the brink of extinction. Nations such as the USA which have given up whaling have had a strong influence, and it is significant that Australia will be staying in the Commission and using its vote for the protection of whales. But is the International Whaling Commission really protecting whales? In the following article, KIM O'SULLIVAN looks at the politicking that goes on behind the scenes when the IWC sets quotas for the World's biggest whaling nations.

*

Moratorium: Japan Leans on Panama

During June and July last year the 30th meeting of the I.W.C. was held in London. The outcome? Whaling quotas were overall slightly down but the drop was insufficient to halt the now rapid decline in whale populations.

For the first time since 1973 the concept of a 10 year moratorium on commercial whaling was on the agenda of the International Whaling Commission (I.W.C.), item no. 9, proposer Panama. It was the first ray of hope (for the whales) and sign of responsibility (for the Commission) for many years.

Three weeks before the I.W.C. meeting began a Japanese trade delegation visited Panama City to discuss Panama's "unfriendly action" towards Japan (i.e. the moratorium agenda item). The head of the delegation, a director of the Fisheries Division, Economic Bureau of Japan's Ministry of Foreign Affairs met with Panama's Minister of Industry and threatened to cancel Japan's planned purchase of 50,000 metric tons of sugar, a $9 million deal, if the moratorium item was not withdrawn and its author, Jean-Paul Fortom-Gouin, replaced as Commissioner.

Japanese representatives have lobbied *all* I.W.C. nations to vote against moratorium resolutions whenever they have appeared on the agenda for discussion but the Panamanian case is the only one where such strongarm tactics have been attempted. Why were the Japanese so scared of a discussion on a whaling moratorium? They now have abandonned their conciliatory position of recent years and adopted a much harder line. This drastic action, as far as we can determine, is the first time one I.W.C. nation has used economic pressure to alter the position of another I.W.C. nation.

Probably the most electric moments of the Commission occurred during the opening session when the head of the Japanese delegation strongly denied that there was any substance to the story.

"It is groundless. We do not need to comment. This is an insult, not only to Japan, but I am sure, to Panama."

However Japan's credibility was short-lived. When the head of their delegation resumed his seat Panama's new commissioner lent towards the microphone,

"Panama wishes to withdraw agenda item 9", he said.

"Surely an agenda item cannot just disappear like that!" insisted Argentina.

The Chairperson ruled that it could and in this case it just did, but that putting items on or back on the agenda required 60 days notice. With that the moratorium, the single I.W.C. agenda item to have captured world attention, vanished.

Meanwhile, crowded into the narrow alleyway outside the Mount Royal Hotel in London 150 demonstrators sang and chanted for the whales, eagerly awaiting the arrival of the delegates. Entertainment was

another kind of mind...

"Today our generation is exploring the planets. Tomorrow our children will take off for the stars. Some day, somewhere in the faraway depths of the Milky Way Galaxy our descendants may meet the first intelligent peaceful extra-terrestrials. By then, I hope, they will have learnt to first try to communicate with them. After they have learnt a common language, they will speak of the times when their ancestors met the first non-human terrestrials who were presumably intelligent. And what are they going to say? They will say at first they hunted them but then they saw their giant brains and they heard their scientists giving warning of their intelligence. They also knew they were beautiful, peaceful and even friendly beings who had no defence against our technology. Are they then going to say: But still they kept allowing a few among us to slaughter them and render their carcasses into gear oil, chicken feed and margarine . . . ? Or would you like them to say: We then embarked upon a new era of co-operation, not exploitation, of peace, not warfare, between peoples of the land and those we may one day call the peoples of the sea, who can share together the wealth and marvels of our beautiful planet Earth."

– J-P Fortom-Gouin.

WHAT FUTURE FOR THE **WHALE**

provided by an ecologist dressed as an "orca" (which unfortunately most passers-by mistook for a vagrant nun) and a counter-demonstration, the first ever at an I.W.C. meeting, by the All Japan's Seaman's Union. The planned centrepiece of the demonstration was the presentation to each of the Commissioners of a scroll bearing the stark message –

"For crimes against nature you stand condemned."

However, years of pushing through anti-whaling demonstrators at I.W.C. meetings had taught most Commissioners to arrive early – or incognito. Friends of the Earth (London), Greenpeace and other environmental groups maintained a permanent picket outside the hotel throughout the week.

Eskimos Not Amused

Probably the best example of the infamous I.W.C. political trade-offs occurred this year over the controversial taking of Bowhead whales by the Alaskan Inupait Eskimos. The bowhead whale is endemic to the Arctic region and now after years of intensive hunting is one of the most endangered of the great whales. However, a small subsistence number continue to be taken by the Eskimos and it is this hunting of an endangered species which has deeply divided the American public and especially the anti-whaling groups.

The Eskimos' argument is that the taking of bowheads is essential to the survival of their traditional, economic and spiritual way of life. The U.S., in pressing for expanded bowhead quotas on the pretext of championing traditional cultures, seems to be engaged in a cosmetic P.R. job whose aim is to conceal what its own development policies have done to the Alaskan Eskimo. It also seems to be postponing by these means, the introduction of wide social and economic policies to help them.

The Scientific Committee of the I.W.C. recommended a zero quota despite the fact that this year, for the first time, a reasonably accurate count of the bowheads in the Bering Strait (an annual migratory path of the whale) was made. This revealed that there was possibly 25%–75% more whales than thought previously, however it was noticeable that only 29 of all the whales counted were calves, indicating a precarious situation for the whale in the next couple of years.

After long debate throughout the early part of the week a compromise was not reached and the Eskimos angrily walked out of the Commission meeting. As they see it they have fulfilled their obligations (abiding by an extremely low quota during the 1978 whaling season while bowhead population assessments were being carried out) and have received in return for their "good faith efforts" a beggarly increase in quotas wholly insufficient for their needs.

They claimed that:– *"The I.W.C. ignored the advice of the people who know most about the bowhead whale and who are most interested in its conservation."*

U.S. Commissioner Dick Frank warned *"I see blood on our hands"* and two days later at 11 p.m. on the last night of the Commission made a brief but eloquent plea for a two whale increase on this year's bowhead quota, which was accepted by the Commission. Will this last minute gesture placate the Inupait Eskimos? We doubt it but we'll have to wait and see.

By next June it seems the I.W.C. will have at least two and maybe three new members. Chile and Spain's representatives have now said they would join the I.W.C. within 12 months and the Republic of Korea's representative said his country would like to but *"it might take a little longer"*. All three are large whaling nations with close trading links with Japan. Once inside the I.W.C. the Commission may provide some sort of control over the dangerous activities of the pirate whaling ships *"Sierra"* and *"Paulmy Star III"* who operate out of provinces in Spain, take endangered species of whales, and export the meat to Japan. Some would be cynical about the sudden interest in joining the IWC feeling that the main impact of such a development would be to make legal the importation, largely by Japan, of whale meat from the soon-to-be members. It will also give more weight to the whaling voice within the I.W.C. which is presently outnumbered by the ex-whalers.

The final outcome:–

★ Despite strong complaints from Japan sei whales in the Southern Hemisphere are now totally protected. Good news but for bad reasons. After less than 20 years of being commercially hunted the sei populations are far worse off than anyone realised, down to about one-third or less of their original population. Protection for Southern Hemisphere sei whales was the one solid gain to come out of the week-long wrangle.

★ Repeating the old careless patterns of the past, the Scientific Committee had differing views on Southern Hemisphere minke whales. The Commission was offered various alternatives and opted for the highest quota; up over 500 from the year before to 8,773 whales.

★ Whale lovers and especially the American public will be anguished to hear that the Californian gray whale has been removed as a protected species and a quota given to the U.S.S.R. of 178 whales. This action totally destroys hopes held by conservationists that the gray whale would be the first whale to recover after being the victim of 20th century commercial whaling The present population of the gray whale is less than 50% of the original, even though it has been protected since 1936. Surely this alone is sufficient reason to ensure continued protection.

★ After week-long arguing by the Commission about figures for the world's sperm whales an uneasy truce was declared during the afternoon of the last day the Commission met . . . amid claims and counter-claims of *"insufficient data"* and *"unjustified quotas"*. Because no agreement was reached regarding whaling in the North Pacific it was agreed that the Scientific Committee should meet in late November to make recommendations to a special December meeting of the Commission to be held in Toyko. It was hoped this meeting would resolve differences about sperm whale quotas for 1979.

"Crucial gaps in our understanding"

Well the Scientific Committee met for two weeks and ended with scientists admitting that they do not know how many whales are left in the sea (surprise, surprise?) and that the proper *"scientific procedure is to admit the data gaps"*. U.S. delegate Douglas Chapman told the Committee that there are *"crucial gaps in our understanding. It is more scientific to present a range of options and explain why firm recommendations cannot be made, than to guess."*

The Commission recommended a zero quota for female sperm whales in the North Pacific and stated that male quotas should be *"set conservatively and certainly not higher than the 1978 quotas"*. Zero quotas were recommended for both males and females off Western Australia.

Twelve days later as the I.W.C. argued over figures American mountain climber Joe Healey scaled a building in downtown Toyko and hung a huge "SAVE THE WHALES" banner from the top storey. (He subsequently spent one week in jail.) But the meeting ground on . . .

Final results were a dubious compromise:–

★ Quotas adopted for male sperm whales in the North Pacific were down about 40% on the previous year. 1978 quota: 6,444, 1979 quota: 3,800. By order of the Commission there are to be no female sperm whales killed but the I.W.C. bowed to protestation of the whalers by allowing what they call a "bicatch" of 437 females. This means that up to 437 females can be killed by accident – if they are mistaken for males. Will all whaling stop then if 437 females are killed before the total quota is filled?

★ It was revealed that Japanese imports of whale meat from nations not members of the I.W.C. increased by nearly 50% during the first eight months of 1978. This is in violation of a "non-binding" I.W.C. policy. A U.S. attempt to strengthen the no-trade-with-non-IWC-countries rule was defeated.

★ Division 5 – the southern ocean waters (i.e. Australia–via Cheynes Beach) received a *zero quota* and is now closed to all whaling. The Commission found that the rapidly declining pregnancy rate of female sperm whales in the area meant that the population will continue to decline for 10 years even though they will no longer be hunted.

The events of the 1978 meetings of the I.W.C. are a sobering remainder of an old maxim of the environment movement – that while economic and political forces can always regroup and fight another day, we must win every battle as the very survival of the whales we are trying to protect is always in the balance.

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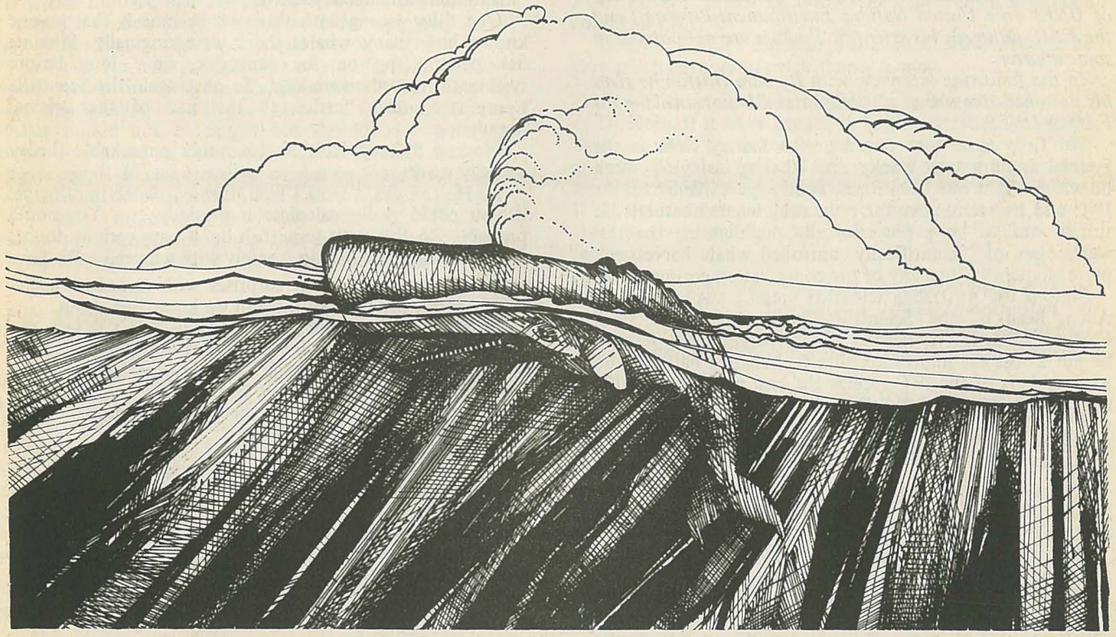
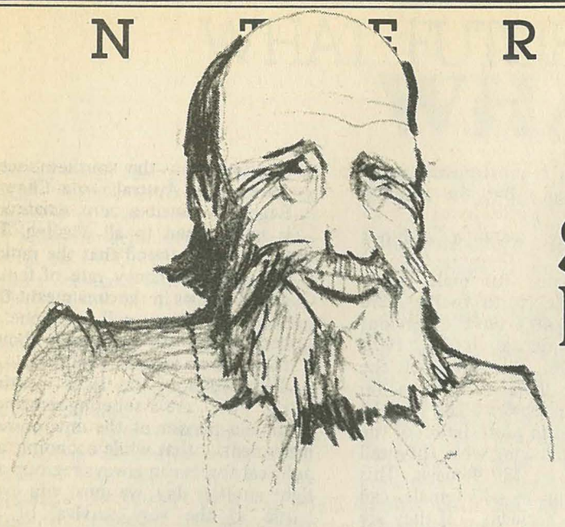


INTERVIEW



SIDNEY HOLT

Dr Sidney Holt serves as an advisor on marine affairs to the FAO – the United Nations Food and Agricultural Organisation in Rome. He first specialised on conservation of fish, then started to study whale populations when the International Whaling Commission asked FAO for his help in 1959. Since then he has been fascinated with whales, and spends as much time as possible studying them.

Whaling was at its peak in the '50s. The blue whale and the hump-back were slaughtered to the brink of extinction (they were totally protected in 1963, none too soon). Dr Holt fought for the introduction of saner policies into the IWC, at a time when public opposition to whaling was in its infancy. He still works with the Commission on behalf of UNEP (the United Nations Environment Program) and the FAO, although his scientific findings are not popular in some quarters.

In the following interview with Barbara Hutton he gives his personal opinions as a specialist and is not speaking for FAO or UNEP.

We first came into contact with Sidney Holt at the Federal Inquiry into Whales and Whaling last year, when he was brought out from Rome as an expert witness on the IWC and its techniques for estimating whale numbers. He turned out to be a powerful ally, highlighting the real weaknesses of "scientifically-controlled whale harvesting" more eloquently than any of the conservation groups could.

Among the Australian scientists present was Dr Radway Allen, head of the Scientific Committee of the IWC. Radway Allen is pro-whaling and throughout the Inquiry he put across the impression that the whaling nations who are members of the IWC receive the best possible scientific advice. But, as Holt explained to the assembled people how the scientific calculations were done these reassurances began to seem less reassuring, and finally they *melted* and wafted away.

The methods used for calculating the number of whales in the ocean seem to me very similar to a "guess the number of jellybeans in the jar" competition.

The basic proposition (first put forward by Dr Radway Allen) which justifies the continuing depletion of whales is the Theory of Maximum Sustainable Yield (MSY to initiates). This theory is based on studies of certain fish, which showed that the fish are heavily exploited, the number of young fish that survive to adulthood tends to rise, probably because there is more food around. It has also been discovered that in *some* species of whales the females reach puberty early and become pregnant younger as the numbers dwindle away.

A few slender observations such as these have been used as a basis for a complex edifice of theories. It has been decided that whale populations should be cut back to about half (one third in the case of male sperm whales), at which point the reproduction rate overall will be at its highest and the maximum number of whales can be killed without reducing the stocks any further (this is called the "maximum sustainable yield").

One thing wrong with this neat scheme is that no-one knows how many whales there were originally. Whaling has been going on for centuries, since long before systematic records were kept. So once again the Scientific Committee must "estimate" the size of the original population.

I asked Sydney Holt if this rather remarkable theory actually works.

Dr Holt: Does it work? Well, it *might* work in principle if you could really calculate it properly . . . You could probably do this with some fish but I have serious doubts about whether you can do it safely with whales. We have even had some unpleasant surprises with erroneous calculations about fish that we thought we knew alot about.

Fish lay millions of eggs, so you don't affect the reproduction rate much by reducing the number of adult fish. But whales have just one calf at a time. They have to go through a long period of bearing the calf and then feeding it and teaching it, so their rate of reproduction is slow, and they are very vulnerable.

FOE: It strikes me there is a lot more wrong with the theory than that. Wouldn't the whales' social interaction affect the rate at which they breed?

Dr Holt: Oh, I feel very sure it does. Our evidence shows that they have a very complicated social life; we know hardly anything about it. But we know that if we interfere with mammals that are highly developed, then you can affect their reproduction in very subtle ways, just as you can with human beings.

For example, sperm whales have a harem structure: one male to many females. What happens if the dominant male of the group gets killed? We don't know how long it takes for another male to come in and take his place. We know hardly anything about it. I personally don't believe that you can reduce sperm whale males to anything like a third of their number and not affect the reproduction rate. I don't believe that the sperm whale evolved in such a way that all those males have absolutely no function in their world.

FOE: Are the sperm whale stocks standing up to the level of killing that has been going on lately?

Dr Holt: Well, we keep on re-analysing the data and every time we get smaller estimates of stocks. We have fairly good estimates of how many animals there are now, fairly good. But I think we have very poor estimates of what sustainable yield they could give. We know now that in the area where Cheynes Beach was operating males have been reduced to much less than a third of their original number and there's unchallengeable evidence that the pregnancy rate of the females has dropped dramatically. And there's evidence that males have been reduced too much in other areas too.

FOE: Should whales in the area off Albany have been protected last season?

Dr Holt: Oh yes! No doubt about it. They should have been protected several years ago, under the IWC's present rules.

FOE: Has the IWC ever considered whales as anything but a resource to be killed? Does it consider that they could have values beyond that such as tourism, or study?

Dr Holt: No, and it can't. The treaty of whaling nations which set up the IWC doesn't allow that. It's a treaty for managing whaling . . . if people in the world decide that whales should not be caught but should be – watched, loved, or studied or whatever – the IWC can't take that into account. It can conserve whales so that they can be exploited in the future, but that's all. You can't get away from that. You could conceivably change the IWC, and there's some discussion about that between governments, but as it is set up now it can't take any other values into account.

FOE: Should whaling be put under the control of the United Nations instead of the IWC?

Dr Holt: Obviously the IWC is biassed in favour of whaling, but I think it would be very difficult to regulate whaling if 150 countries were involved in every decision; the ones that are most interested in whaling should be the members of the treaty. However even if the IWC represents only a few countries – less than twenty, say – it should still be under the watchful eye of an appropriate body in the United Nations system. I think the United Nations Environment Program is perhaps the most appropriate body, though the FAO is of course very interested.

FOE: Do the third world countries in the United Nations see whales as a food source?

Dr Holt: Not many of them know much about whales or have a great deal of interest in them right now. Whales have traditionally been caught by what are now industrialised countries. (The United States, Britain, Japan, the USSR, Australia, Norway and other countries have all been involved.)

One or two countries are very close to where the whales travel . . . Brasil, is one. Whales also happen to come right by the shore of Tonga and they catch just a few, very few. But the third world countries as a whole couldn't possibly see whales as an important food resource. They could just never produce enough whale-meat. Even in the Japanese diet (and Japan consumes most of the whale-meat that's produced in the world) it provides less than 1% of the protein.

FOE: As well as killing whales themselves, there are moves afoot to start fishing krill, the small creatures which baleen whales eat. Do you see much future for krill fishing?

Dr Holt: Well, krill is being harvested now, by Poland and Japan, the Soviet Union and West Germany. Some of them are catching quite a few thousand tons. I think the krill fishery is going to develop fairly fast. We don't know whether it will be used for human food or processed for animal feeds; maybe both. Already it's sold as a small shrimp in Japan as human food.

But it's expensive to harvest krill. You've got to make it into a high quality luxury product and only a limited amount of that kind of thing can be sold.

FOE: So krill is not an answer to food shortages in poor countries either?

Dr Holt: I don't think so, not at all. It would have to be very much cheaper to catch than it is now.

FOE: If it were, would this affect the baleen whales?

Dr Holt: If it were caught in huge quantities the whales that are now protected might not recover at all. Other animals that also feed on krill have increased a great deal since the whale was depleted: crab-eater seals and penguins. If whales are going to have to compete with man as well there is, to my mind, some doubt as to how far they *could* recover.

FOE: It has been suggested that the International Whaling Commission should introduce a 10-year moratorium on whaling, or at least introduce a stricter regime. If it did so, would countries such as Japan and Russia simply drop out of the IWC?

Dr Holt: That might have been true some time ago but I have doubts now. The signs are that Japan would not drop out whatever the IWC decided, although it makes threats to do so, because certain trade and diplomatic pressures might be brought to bear if it did.

The United States has legislation called the Pelly Amendment, for example under which it can ban trade in fish products with any country that does not abide by international fishery management decisions. Japan's fish product trade with the United States could be very severely affected.

FOE: Could Australia do the same kind of thing?

Dr Holt: Australia's got trade relations with Japan. Even without legal means such as the Pelly Amendment changes in policy between trading partners certainly affect the policy of whaling countries. Japan is not the only one, either.

FOE: Japan and Russia are the two main whaling nations; they take about 80% of the catch between them. Even if Japan gave up whaling, could Russia be persuaded to give up?

Dr Holt: Trade pressure would not quite so easily be brought to bear on the Soviet Union but some people have been told that the Soviet Union would stop whaling as soon as Japan did – I don't know if that's true.

FOE: Do you see much value in continuing whaling?

Dr Holt: Well, companies in some countries can still make profits out of it, right? But they're using old ships that are running down. They're not really making the profits they used to, in fact the government now very heavily subsidizes Japanese whaling. So the economic justification for continued whaling might very well run out when the ships wear out. As far as the products go, there are substitutes for sperm oil in most of its uses. As substitutes such as jojoba oil come on the market the price of sperm oil will come down and this will make sperm oil just not competitive.

FOE: You see jojoba as a practical alternative to sperm oil?

Dr Holt: Yes, there's no doubt about that. It's being produced in increasing quantities. It will be some years before there is enough to replace all sperm oil. But there are other substitutes for some uses.

Personally it seems to me that whaling is a dead industry. It will continue in a few places, but pelagic whaling (that is, oceanic whaling, with big mother ships) such as Japan and the Soviet Union use will probably come to a stop . . . it can't keep going on an economic basis much longer.

At the same time activities of conservationists, especially in Great Britain (which is I think a main market for Australian sperm oil) have put pressure on the industries, for example the leather industry, not to use sperm oil. I'm sure this has had quite a big effect on the market.

FOE: Do you see conservation goals, such as protecting whales, as conflicting with the goals of the FAO, which is concerned with making the maximum amount of food available to human beings?

Dr Holt: Well, FAC is interested in conservation so that future generations of people will have food. They may need it more than we do. When conservationists go so far as to say that whales should not be exploited at all because they have some other values – they're intelligent or whatever else – that of course would be in conflict with FAO's policy. But as I've said, whales really can't provide very much food for mankind, anyway, so the conflict is not very sharp. In any case the real need is, I believe, to ensure that future generations are left *the option* to decide whether whales should be regarded as a food resource, as an amenity, or simply left alone.

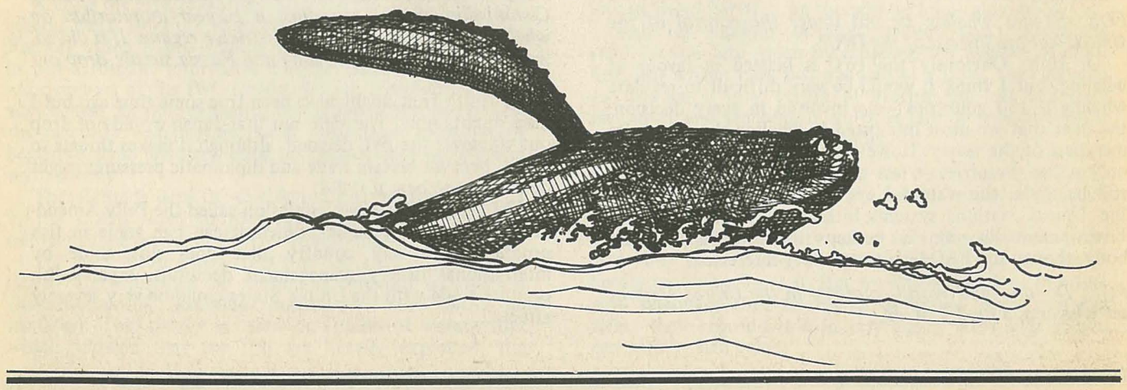
It's the same with forests: FAO says we need wood; we must take some wood from forests now, and leave some for the future. But that doesn't mean to say that you can't leave some forests without harvesting them at all, for some other value – for recreation, or just because they're there.

FOR: So you think that it is possible for a person to be both; to be a conservationist and be concerned with human needs?

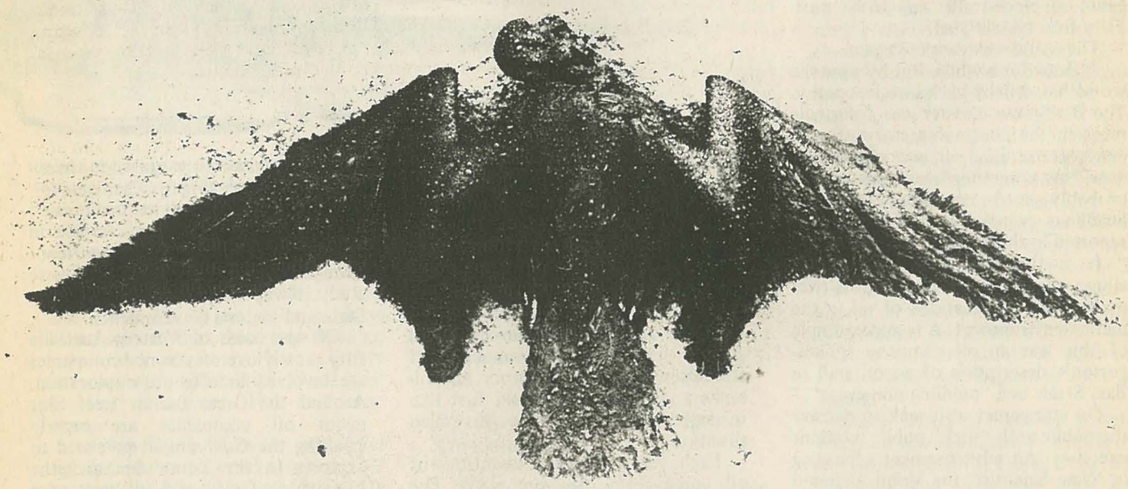
Dr Holt: Oh yes, sure! They're not contradictory by any means. Sometimes those who want to exploit resources now, "and to hell with the future" try to paint a picture that conservationists are ruining the economy, causing unemployment and all that kind of thing, but this I think is a political tactic. I think it's nonsense in the longer term. Conservationists give us hope that there will be food as well as other things left for future people.

FOE: Have you got any advice for us?

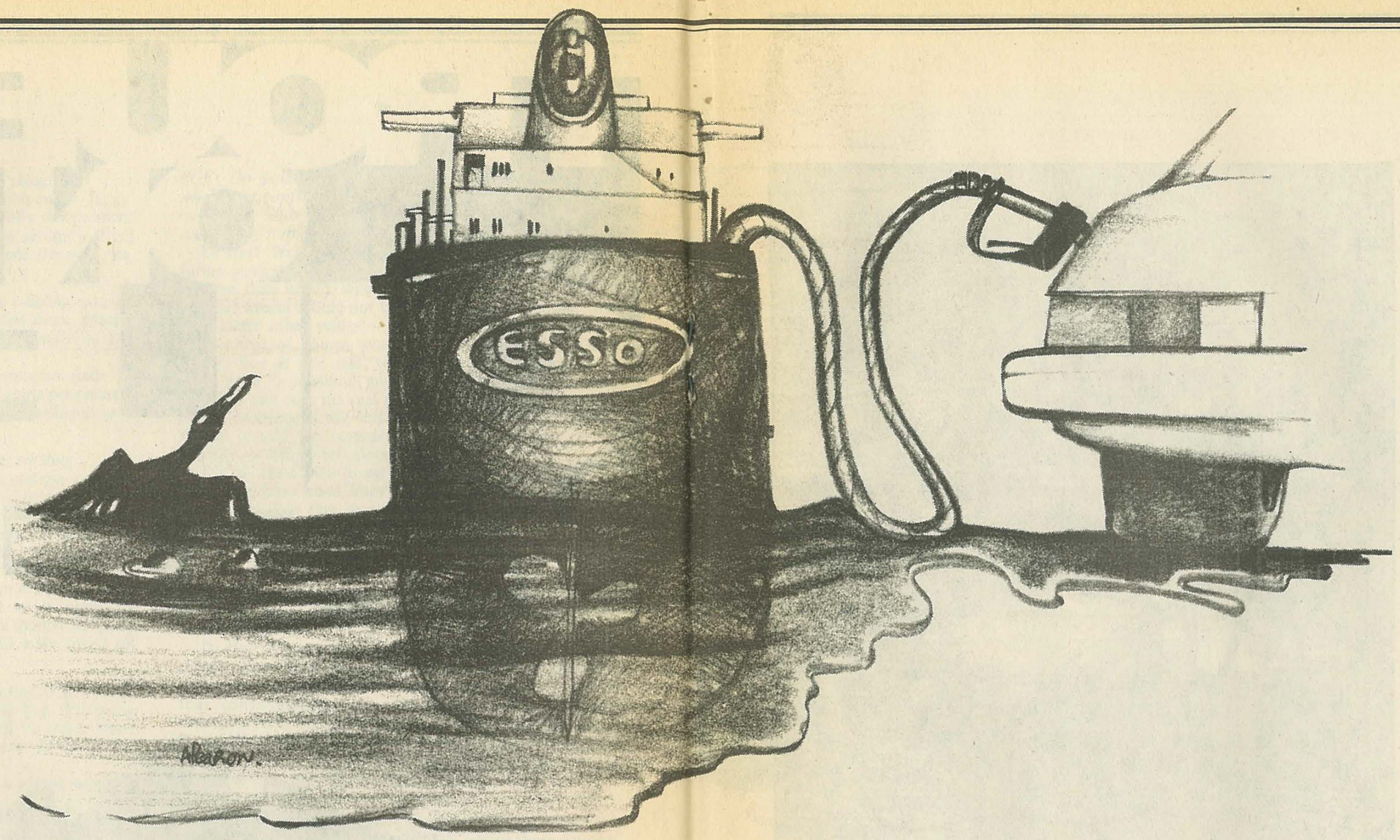
Dr Holt: One thing I have observed among those who are trying to restrain the killing of whales in many countries (I don't know about Australia) is that they're all pulling in different directions, even though they have the same objectives. My advice is for them to unite their forces, not to splinter and dissolve into internal strife. There are few enough of you without doing that.



TROUBLE ON TROUBLED WATERS



OIL SPILLS AND THE MARINE ENVIRONMENT



In March 1969 the supertanker Torrey Canyon ran aground off the coast of Cornwall. It broke up and spewed out over 100,000 tons of oil.

The world was shocked.

Last year – nine years later – the Amoco Cadiz was grounded and lost 220,000 tons of crude oil off the coast of Brittany, just across the English Channel from Cornwall.

By this time the world – with the notable exception of the residents of the Brittany coast – had come to view such events with apathy.

Two months after Amoco Cadiz, the Eleni V. collided with another ship and heavily polluted the Norfolk and Suffolk coasts with 12,000 tons of oil.

Then, in October, the Greek tanker Christos Bitas ran aground and spilled thousands of tons off the Welsh Coast. The experts argued but few people really cared. It was simply another tanker spill among many.

On December 31st the Andres Patria was holed by an explosion and lost 55,000 tons of oil off the Spanish coast. Ho hum.

On Monday, January 8, this year the 61,000 ton French tanker Betelgeuse exploded in an Irish port. Fifty-four people died.

The world was shocked again.

At least for a while. But by now the world has drifted back into its apathy. The Betelgeuse disaster was again, one more in the continuing story of accidents concerning oil and oil-tankers, now so commonplace that people probably read no more than the headlines when, and if, they are reported in the press.

It is this lack of interest which allows the oil companies to gloss over or hide the implications of oil in the marine environment. A recent example of this was an oil company spokesperson's description of an oil spill in Bass Strait as a "piddling non-event".[1]

Oil companies also seek to deceive the public with "slick" public relations exercises. An advertisement appearing in 'New Scientist' for Mobil included the statement: *" . . . each company maintains a vigilant guard against spills and blow-outs and has its own disaster contingency plan and specially trained personnel to cope with emergencies."*[2]

Yet, there is no agreement on the best way to disperse a spill. There is no agreement on the best way to contain a spill. There is no agreement on the best way to clean up after a spill. No way has been found to prevent spills. No way has been found to obviate human error. And what's more the past record of oil companies indicates that they do not really care anyway.

In the following we show how oil affects the marine environment and also present a brief history of oil-tankers. However we would first like to say something of the Australian situation.

Each year increasing quantities of oil come from off-shore wells. The whole of the Australian coastline is divided into areas where permits to explore for petroleum have been taken out. No areas are considered sacred. No matter whether the water laps or includes National Parks, Aboriginal Reserves, residential or recreational land – all areas are explored in the oil companies' rush to get richer quicker.

In some areas no oil has been found and the companies move on, but in many places they are confident enough to engage in more intensive study, always with the blessing of the State and Federal Governments.

Off the coast of Western Australia fifty mostly overseas-owned companies are involved in offshore exploration. Around the Great Barrier Reef four major oil companies are eagerly awaiting the Government go-ahead to explore. In the Timor Sea and the Bonaparte Gulf oil interests are exploring enthusiastically.

Studies are urgently needed on the affects of oil pollution on tropical estuarine areas. Many aboriginal reserves are adjacent to coastal areas where they could be affected by rig blow-outs or oil spills. Significantly the reserves continue only to the low-water mark, thus preventing aboriginal people from having any say in what happens in the waters wherein many derive their livelihood.

There were 12 known oil spills in Australian waters between March 1970 and March 1978[3] but so far we have been lucky in that there have been no supertanker disasters. This is simply because berthing facilities do not exist in Australian ports. This may soon change.

In New South Wales the people are fighting moves to build a supertanker berth in the heavily-populated Botany Bay area. Apart from the dangers of an explosion in a built-up area, the Bay and its foreshore have a rich and diverse ecology which would be greatly affected by oil pollution. At least 150 species of birds, a variety of shellfish and other marine life, mangroves and sea-grass beds are found in the area. An Inquiry has stated that the supertanker berth should only proceed if it is imposed on Botany Bay by national policy. The Federal Government's record shows that profits come before people and economics before environment: the people of Botany Bay will need Australia-wide support to win this fight.

Oil, How It Effects the Marine Environment.[4]

"Our beautiful Wild Harbor River, which used to produce such an abundance of seafood for both commercial and family fishing, had turned into a massive graveyard. Along the shore, you could fill a bushel basket with dead lobsters without walking any distance at all."[5]

So begins a description of what happened after a 'small' oil spill in the mouth of a river in Falmouth Massachusetts, U.S.A. The speaker was the Town's "Shellfish Constable". He was very upset. Justifiably. The spill was of about 700 tons. The impact, frightening.

"In West Falmouth Harbor, the scallops had died. They were lying in the beds where the tide left them, with the meats still in them. At low tide, there were three windrows of dead scallops stretching off side by side for a couple of hundred yards. There were whole beds of them lying along the beach. One morning, I saw schools of little baitfish coming in, and they were eating the scallop meat right out of the dying scallops. So you could see right in front of you the oil was getting into other animals and the food chain."

And the constable continued his descriptions. *"There were crabs with their legs twitching. There were all kinds of things, mixed up like soup, at the waterline. All the periwinkles were gone off the rocks and were lying in heaps in the low-tide pools. The grass in the marshes was as brown as in winter. The dead clams made such a stench you'd have to run. And there didn't seem to be any end to them. You didn't think things could go on dying any longer, but they did."*

Oil is made up of hundreds of different compounds or classes of compounds called fractions. In different environments the fractions cause markedly different reactions. Likewise the boiling points and interactions of the various fractions are different and the composition of petroleum is altered in various ways when it enters the marine environment. For these reasons it is impossible to accurately predict what will happen when a spill occurs.

Some things are known however. When oil enters the sea it spreads over the surface to form a slick of between .002 cms and 4 cms but with some thicker patches. After about 10 days about 50% of the oil components will have evaporated. (That is, in temperate zones. In colder areas the process is far slower and infinitely more sinister.) Other parts of the oil will form emulsions with the water and these

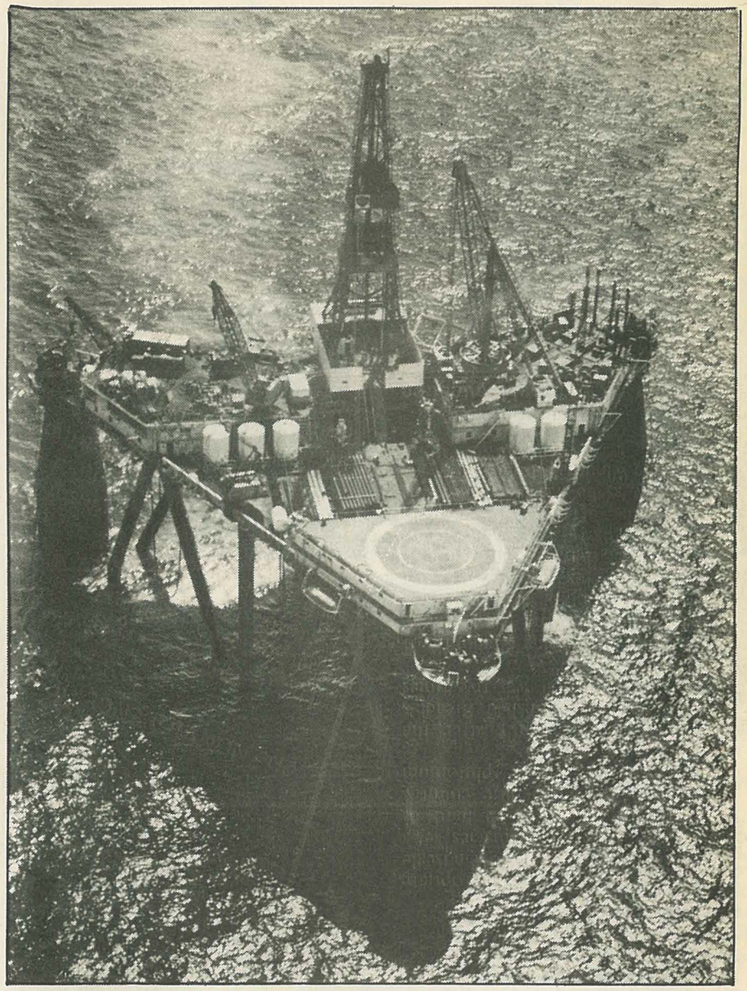
emulsions may spread great distances doing considerable damage before they are broken down by bacteria (for the greater part) over a period of years.

Depending on conditions the slick will begin to break up in a couple of days, but its effect will last for up to twelve years or more and in some cases will have even destroyed or altered an eco-system.

"A preliminary assessment of the damage the Ekofisk (North Sea) blowout caused to various marine organisms prepared by the Ministry of Agriculture, Fisheries and Food (MAFF) shows the effects were short-lived. **The long-term effects of oil pollution are much more insidious and difficult to assess."** (Emphasis added.) This statement was made under a heading; *"Scientists argue over oil pollution".*[6] And, because there is too little knowledge of how to deal with a spill and its long term affects and the fact that scientists employed by oil companies are wont to minimise the dangers, many such headlines appear.

Yet there is little doubt that oil is a deadly poison. In the words of marine biologist Dr Alan Southward, following the Amoco Cadiz disaster, *"the oil itself has proved very toxic to marine life, much more so than the Torrey Canyon oil which had time to evaporate the lighter and more toxic components at sea before it stranded. Thus in the region close to the wreck of the Amoco Cadiz, from Tremazan to Lampaul-Ploudalmezeau there has been great destruction. Shore fishes, including the wrasses (a common fish family.—B.A.), and common rocky shore animals such as winkles and limpets have been killed, and many seaweeds damaged or killed. At least 35 species of sea-birds suffered, but once again it was the auks and cormorants that provided the bulk of the corpses recorded. Farther east from the wreck the oil soon entered the bays and estuaries, killing shellfish, including many oysters, and tainting the survivors."*[7]

The effect on various marine organisms varies as does the amount of oil in solution required to poison species. Fishes will die when the soluble aromatics (those oil compounds which form a solution with the sea water) are at 5 to 50 parts per million (ppm). But the larvae of any species, including many corals, will die at concentrations of only .1 to 1.0 ppm. A toxic dose for crustaceans is somewhere between 1 and 10 ppm. Phytoplanktons are effected at as little as 1 ppm.



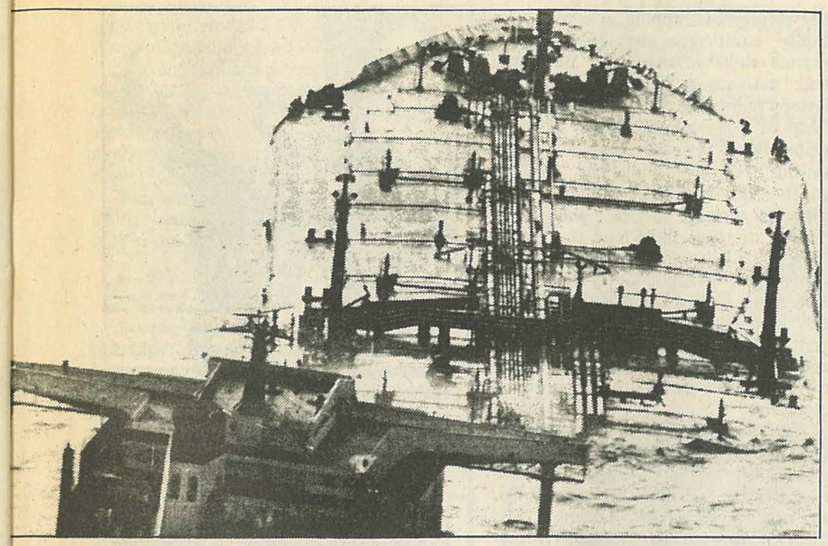
The Sea-Quest oil rig in the North Sea.

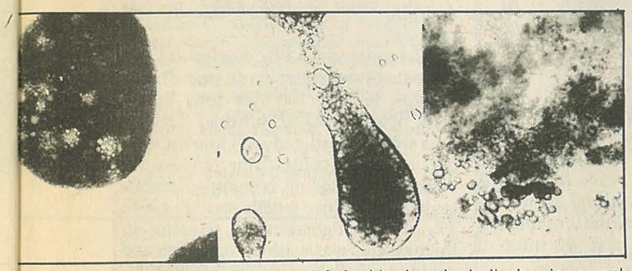
Birds are the most dramatic victims of oil spills. Few birds which are coated by oil survive, either dying because of lowered buoyancy and insulation or the swallowing of oil.

It can be seen that the aftermath of an oil spill is horrendous. There are many other ways also that oil affects the environment but lack of space precludes going into detail.

Most oil spills can be attributed to human error. As there could be rather vocal objections to removing the human part of the problem it is imperative that the error is erradicated. It is the responsibility of the oil companies and their carriers to undertake immediate action to absolutely prevent more oil finding its way into the seas.

Although a large percentage of oil entering the oceans does so from sources other than tankers (see fig 1) it is in oil-tankers that the irresponsibility of the oil industry can be best seen.





Above: The wreck of the Amoco Cadiz

Oil under the microscope: *left* freshly deposited oil, showing complex water in oil structure of the emulsion; *centre*, 9 week old emulsion scraped from rocks after partial drying; *right*, simple oil globules in faecal pellet of top shell *(Monodonta)* that has been browsing on old oil emulsion.

Figure 1.[8]

Sources of oil pollution in oceans

SOURCE	PERCENTAGE (based on assessed 6.113 Mill tons.)
Natural seeps	9.8
Offshore production	1.3
Transportation	34.9
Coastal refineries	3.3
Atmosphere	9.8
Land based	40.9

A Short History of Super Tankers

Oil tankers are remarkable on four counts, apart from their size.

- When fully loaded, like an iceberg, the greater part of its mass is below the surface. (80%).
- They are, individually, the shortest lived of ships – built to last only 10 to 12 years.
- They are the most spectacularly accident prone of ships; their contents spewing out over the ocean, destroying marine life and shorelines.
- They epitomize the gross and destructive appetite of the consumer society, which, although only 20% of the world's population, consumes 75% of the world's oil.

The development of oil tankers began in the 1800's when the U.S. began exporting oil to Europe. At first the oil was carried in barrels on conventional ships but later special tank steamers – the first being the 2.307 ton 'Gluckauf' – were designed. After World War II, when industrial nations were converting their previously coal based industries to oil, tycoons such as Daniel Ludwig, Aristotle Onassis and Stavros Niarchos started pushing oil tankers into the 100,000 dwt* supertanker dimensions.

*dwt. Deadweight ton. This is a ship's capacity weight in terms of cargo, fuel, stores and ballast. As the cargo carried by a supertanker is by far the largest part of it's weight dwt roughly indicates how much oil the ship can carry.

The dimensions of the supertankers may not have exceeded the 100,000 dwt mark if not for the closure of the Suez canal in 1956. Oil companies and independent entrepreneurs then had to decide if Middle Eastern oil bound for Europe should be carried around the Cape in a larger fleet of small ships or whether it would be more economical to build even larger supertankers. Larger ships won out. Not only did they cost proportionately less to build and need proportionately less power to move but they also needed no more crew than a smaller tanker. What's more, one large tanker instead of two or three smaller ships saved on port charges, pilotage and general administration.

The 1960's saw the dominance of Japan in this field when ships of up to 500,000 tons were built although the majority were between 200,000 and 250,000 tons. There was a splurge of tanker building which continued unabated until the 1973 Arab–Israeli war and the resultant quadrupling of oil prices in 1974.

The incredibly rapid development of tankers from 50,000 tons in 1955 through the 200,000 tons and over-class (VLCC – Very Large Crude Carriers) and the 400,000 tons and over class (ULCC – Ultra Large Crude Carriers) including those of 500,000 tons is the cause of many of the safety problems associated with supertankers. The ten-fold increase in size in such a short time span left little room for experimentation into the difficulties of dealing with such incredibly large sizes. The mammoth hulls have a tendency to buckle and crack under certain pressures. Quality of work has also suffered due to the haste in which these ships were built. In 1972 two Japanese shipyards had to recall 55 tankers, built between 1962 and 1969 to repair poorly executed work.

Other problems, as can be expected with something the size of a supertanker, exist in abundance. The larger the tanker the longer it takes to stop. A 250,000 tonner doing 16 knots takes 21 minutes to pull up and it will travel three miles before it stops. Tankers are exceedingly difficult to manoeuvre, especially at very slow speeds such as those demanded by fog or shallow water. To make matters more difficult, many areas have not been remapped for decades, some wrecks remain unmarked on charts or even physically, sand banks move and water levels change due to tides and surges. These hazards, while a real threat to all shipping are even more dangerous to tankers with the greater part of their bulk far below the surface.

The increasing number of ships and the increasing traffic in certain areas also causes problems. About half of all collisions in the world are in the English Channel area, the majority of these being in the Straits of Dover. And tankers are most commonly involved.

The reasons for collisons are many. The lack of manoeuvrability of tankers, the density of shipping in some areas, faulty equipment, appalling lack of marine skills among some crews and bad navigation all contribute. The latter two points mainly apply to 'flag of convenience' ships. That is, ships owned by one country but for various reasons flying the flag of another country. For example, 40% of Liberian tonnage is U.S. owned. The owners of these ships tend to employ under-qualified and over-worked crews. Gulf, Esso, Texaco, Getty Oil, Tidewater and Union Oil are all guilty of this as they strive to minimize costs and maximise profits. Between 1968 and 1972 'flag of convenience' ships were involved in 33% of all shipping casualties.

Flying the 'flags of convenience' also means that prosecution of the owners of ships involved in accidents is difficult – if not impossible. For example; *"The Torrey Canyon was owned by the Barracuda Tanker Corporation, a financial offshoot of the Union Oil Company of California, which leased the ship and had in turn, subleased it to British Petroleum Trading Limited which was a subsidiary of the British Petroleum Company. The ship built in the U.S., and rebuilt in Japan, was registered in Liberia (and flew the Liberian flag), insured in London and crewed by Italians."*[10] A somewhat complex picture for even the best of international lawyers.

But at least the crew of the Torrey Canyon was qualified, which is the exception to the rule. (Some steps have been taken to overcome the practice of employing unqualified or under-qualified crew. IMCO, the Intergovernmental Maritime Consultative Organisation, has set down minimum training standards for crews following a meeting in June 1978. However the regulations will only come into force 12 months after being ratified by at least 25 countries owning between them 50% of the world's gross tonnage of shipping. It could take a long, long time.)

Another danger of tankers is the highly flammable nature of the cargo. Not only can the oil itself ignite following an accident but, and more commonly, the gas created in the tanks can explode violently when

ignited by the minutest spark. (Insurance premiums on oil tankers went up by 25% following three supertanker explosions in sixteen days in December 1969.)

However it is the spilling of oil into the marine environment which stirs the imagination and fires indignation most. There are three ways spills can happen. Accidents, usually involving human error or negligence, deliberate dumping of oil from tankers, and sabotage.

The majority of spectacular oil spills involve human error (the Torrey Canyon spilled 100,000 tons of oil after being wrecked in broad daylight on a well charted and well known reef) but most oil spills from tankers are deliberate. After oil is pumped from a tanker a residue, which can be up to 1% of the original cargo, remains. In the past this was washed out at sea and could easily amount to 2,000 tons. Allegedly this practise has been superseded by the Load on Top (LoT) method whereby the residual oil is mixed with water and floats to the surface to be pumped off with the next load. The general assessment though is that although 80% of tankers are equipped to use this method only half do and even then a 200,000 ton LoT tanker might still be discharging 1,000 tons of oil with its tank water.

These smaller spills are much more frequent than those which get all the publicity and they are considered to do much more damage to the environment.

Sabotage fortunately has not yet been a major problem although it has occurred and will undoubtedly be engaged in again. It is a horrifying thought. The damage which could be done by blowing up a 500,000 ton supertanker would be immeasurable in terms of destruction and lives lost.

Oil tankers have a shocking history of collisions, groundings, explosions, break-ups, damage to the environment and their owners have a record of negligence, parsimony, greed and exploitation of crews and others.

Tankers are floating bombs at worst and fragile toxic chemical containers at best.

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A recent public hearing into oil prices in Melbourne was estimated to have cost $5 million.[11] Far greater amounts are spent in oil exploration. It is time for this sort of money to be spent on research and development of safe, non-polluting and renewable sources of energy.

The Authors, *Brian Appleford* **and** *Linnell Secombe*, **are founders and co-workers of the** *Antarctic Defence co-alition* **– the only non-government, non-business organisation in Australia which researches and disseminates information about Antarctic and other marine environmental issues. The group publishes an excellent newsletter every month or so called** *Ocean Currents* **and a newspaper,** *Ice*. **For further information about the ADC and its work, write or call into the ADC's office:**

Antarctic Defence Coalition
358 Rathdowne St.,
North Carlton. 3054

NOTES

1 *"The Age"*. March 3, 1979. pp3.
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3 *Oil Spills. Prevention and Control of Oil Pollution in the Marine Environment.* Report of the House of Representatives Standing Committee on Environment and Conservation. Australian Government Publishing Service. September 1978. pp114/115.
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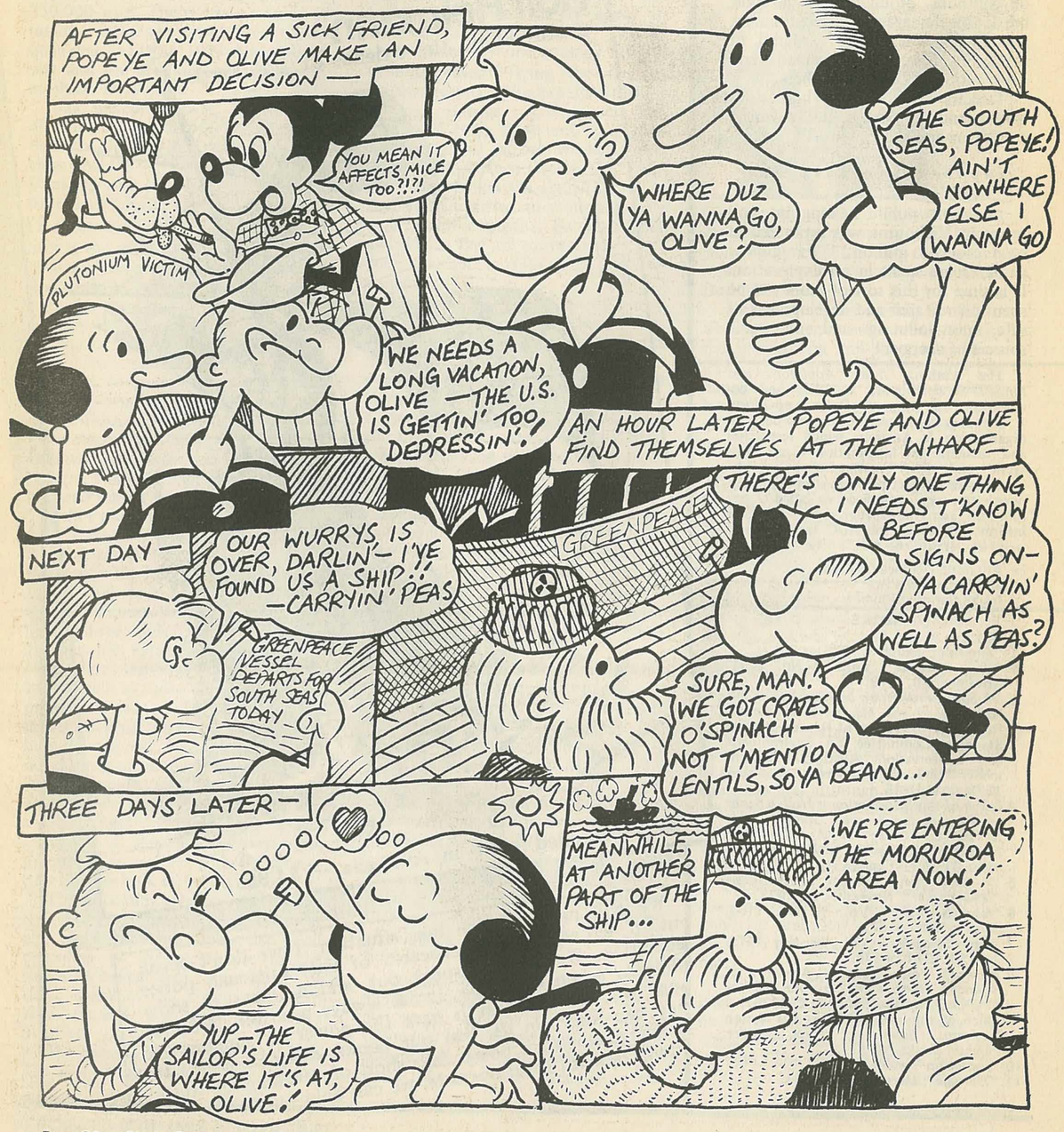
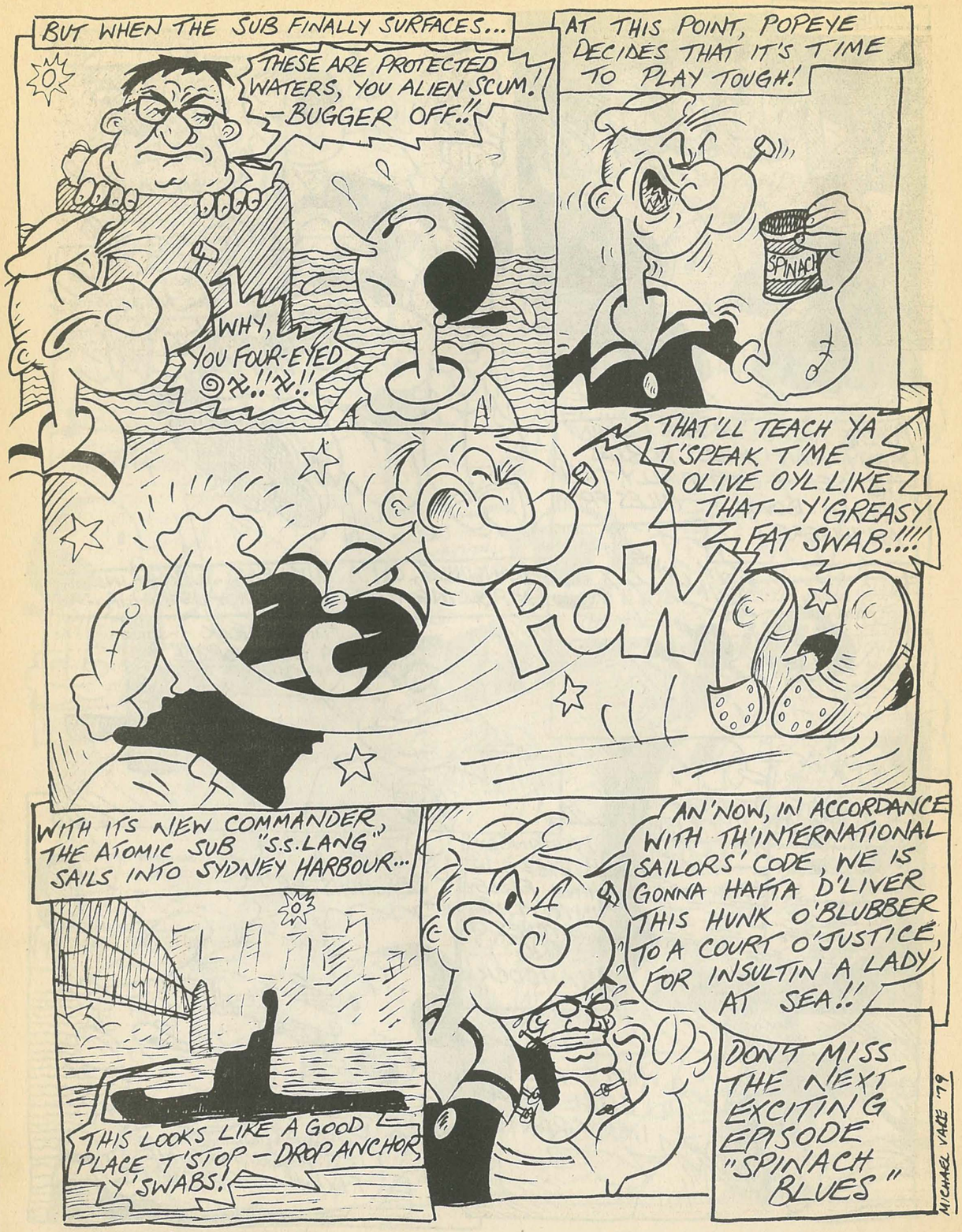
We will never change that situation if we don't speak
out, if we remain so shit-scared of libel suits and police
retaliation. We have to speak out, and we have to show
solidarity when we do so. It has always been the case that
those who fear the truth have the power to suppress it.
They can imprison us, ban our books, deny us access to
the media. But their power falls short of changing the truth.
As long as truth is on our side, we can hold our h

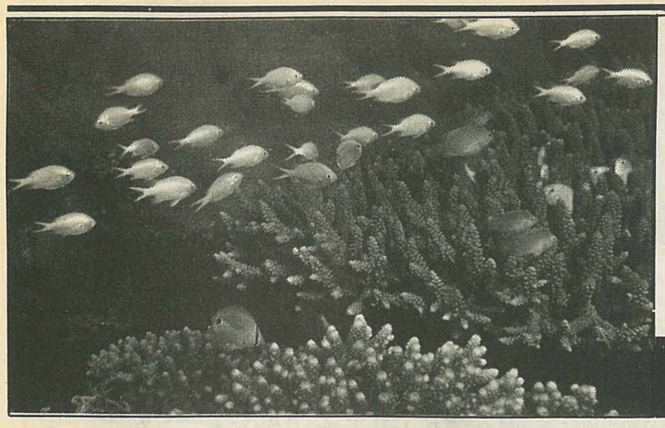
BEGINNING

THE IMMIGRANTS

(AN UNLIKELY TALE OF HOW A POOR SAILOR AND HIS GAL FIND FAME AND FORTUNE IN AUSTRALIA...)







GREAT BARRIER REEF OILING A FEW PALMS

The Barrier Reef is a maze of islands, channels and over 2,500 coral reefs stretching 1,900 km along the Queensland Coast, from Fraser Island almost up to the coast of Papua New Guinea. It supports a complex web of mutually dependent species – coloured corals, fish, seaweeds, birds, turtles, sharks and dolphins . . . There is no other reef of such richness on such a grand scale in the world. Overseas it is considered part of the World Heritage, an amazing natural phenomenon which should never be exploited and destroyed. The Reef probably plays an important part in the ecology of the whole Pacific Region, as the breeding place of turtles and other creatures. However the reef is under threat.

On December 24, Mr Camm, the Queensland Minister for Mines was reported in the press calling for oil-drilling off the Queensland coast. Mr Camm claimed that *"Off-shore oil drilling is going on throughout the world with no danger to marine life and I can see no possible reason for any objection to off-shore exploration in this State."* He said that *"technological developments in off-shore drilling had improved tremendously in the last decade virtually eliminating the possibility of a major spill,"* and that *"a number of experiments on the possible effects of crude oil on coral had shown that no damage had been caused. In some instances growth had been encouraged."* The oil industry, he said, did not throw away money by spilling oil!

The reality: The oil industry has a ratio of approximately one major spill for every 57 million tons of oil obtained from offshore drilling platforms. In the North Sea oil field there are three spills a year on average.[1] If a major oil field were discovered in the Barrier Reef region numerous wells would be sunk, and the chances of a spill would increase with every new well. Experience would lead us to expect minor discharges as well.

Laboratory tests have shown that only one or two hundred parts per million of oil in the water is sufficient to kill coral. The oil may kill the coral polyps outright or else irritate them, leaving them open to infection.

These tests, however, probably underestimate the effect of oil spills, because they can only be carried out on hardy species, able to survive transplanting to a laboratory. Other corals are more susceptible to environmental change and cannot be laboratory tested. Studies on shellfish, which are highly sensitive to oil pollution, show that specimens left in their native habitat can be killed by as little as 5-50 parts per million of oil. Clams in the Great Barrier Reef are already endangered by overfishing. Benthic crustaceans (lobsters, crabs, etc.) can be killed by 1-10 parts per million of oil, and for larvae of all species the rate is as low as 0.1-1 ppm.[2]

Coral polyps are vital to the ecosystem of the Reef. Coral reefs are made of millions of tiny cells of calcium carbonate, built by the polyps to protect their vulnerable bodies. Without the ceaseless activity of the polyps the Reef would die, and eventually be reduced to rubble by the waves that crash against it.

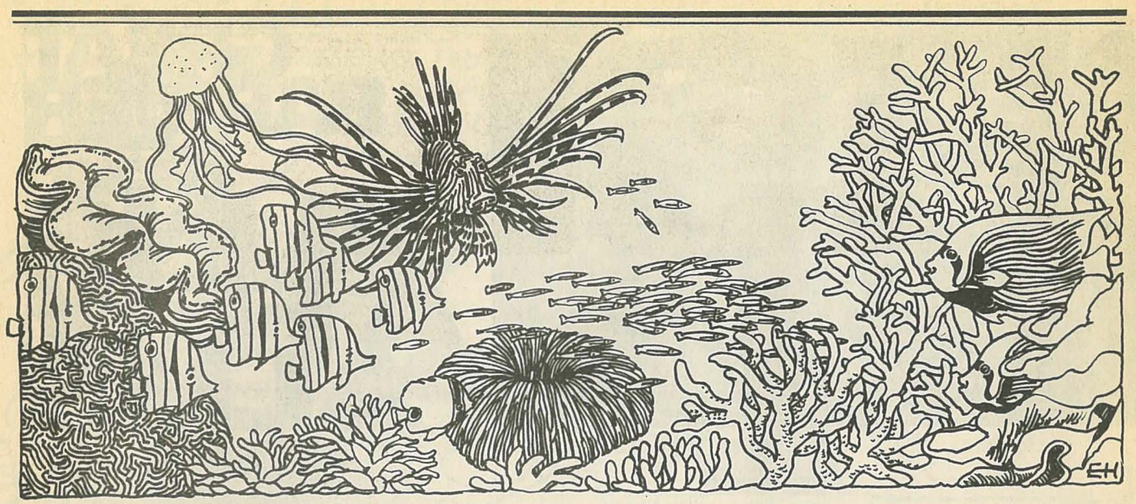
The Park That Never Existed

Oil drilling is not the only threat to the Reef: increasing tourism, overfishing and collecting of tropical fish for the aquarium business are taking their toll. Oil tankers travel past the Reef, exposing it to the constant danger of a major spill, and there is still some suggestion of sand-mining. But oil drilling is the most immediate threat.

In 1969 somebody happened to look up the oil prospecting register and discovered that 80% of the Great Barrier Reef region was held under prospecting authorities from the Queensland state government. The furore that followed this discovery prompted John Gorton, then Prime Minister, to hold an inquiry into drilling on the Reef. The Inquiry came out against any activity on the Reef itself till exhaustive studies over a period of at least 10 years had been carried out to determine the effects of oil pollution on coral. The commissioners were divided over the degree of risk involved in drilling in the channels between reefs. By the time the Inquiry had produced its report there had been a change of Government, and the new Prime Minister, Mr Whitlam, *"came down firmly for taking no risk at all."* Legislation was drafted to enable a Marine Park to be set up in the region, with mining specifically excluded from the park.

The Great Barrier Reef Marine Park Act was passed in 1975. A three-man* Marine Park Authority was set up, with a 17-man consultative committee. You can get a copy of the Authority's glossy, green blue and yellow pamphlet on the Great Barrier Reef Marine Park (with photos) from the Marine Park Authority, PO Box 791, Canberra City. The only thing now lacking is the Marine National

*The word "man" is used advisedly.



Park itself, which has progressed no further than that since the Labor Party was dismissed in 1975. In the meantime the authorities to prospect for oil are still on the books.

Since the present Government has been in power the Prime Minister (Mr Fraser) has set up an interdepartmental committee to see whether the oil pollution research recommended by the Royal Inquiry can be carried out more cheaply and quickly than the proposed 10 year program. Last year, at a Premiers' Conference, Mr Fraser offered to hand back control of fisheries within 3 miles of the coast to State Governments (a right which had been won by the Federal Government in a court case in 1975). As there are several islands owned by the Queensland Government scattered through the Reef area, this would cut deep into any National Park, making it a nightmare to administer and alter it.

The Liberal Government has issued a number of statements about mining on the Reef which are intended to reassure. According to Mr Anthony, *"The attitude of the Government is that there won't be any mining on the Great Barrier Reef. That's been our attitude all along."* However he added that mining could be allowed in the area. How near? According to Senator Webster, Minister for Science and Environment, *"I will do all in my power to ensure that no action is taken that will endanger our great natural heritage, the Great Barrier Reef."* He added that there was clearly a need for research into the effects of oil drilling in the waters off the Reef.

This statement would be more reassuring if Senator Webster had given some indication as to what he considered a danger to the reef, and if he in fact did have more power.

In 1977 The Marine Park Authority announced that it was ready to proclaim the first stage of the park, at the southern tip of the reef. There has been no sign of activity from the Government since, and it is believed that Senator Webster, who recently had Environment added to his portfolio in a cabinet reshuffle, was advised not to go ahead with proclaiming the Marine Park by the Prime Minister. Mr Fraser said that instead an interdepartmental committee would be formed to "review" and perhaps abolish the Marine Park Act.

If this legislation is scrapped the fight to save the Reef will be back to square one. Although oil drilling is the most immediate and far-reaching danger facing the Reef, there are many others, which can only be kept under control if the Reef area is proclaimed a National Park. Under the current park proposal this would mean some commercial exploitation: tourism, fishing etc. but at least the whole area would be kept under review and given some protection.

What Can Be Done?

The Government may act to protect the Reef if it feels this is what the public wants. Write to:

The Prime Minister, Mr Fraser,
House of Representatives,
Canberra ACT 2600.
Phone Canberra (026) 73-3200 or
Melbourne (03) 63-6648.

Senator Webster,
Commonwealth Parliamentary
Offices,
400 Flinders Street,
Melbourne 3000.
Phone (03) 62-2521, or
The Senate, Parliament House,
Canberra, 2600.
Phone (026) 73-3200.

You could also write to your local member of Federal Parliament. A Labor backbencher has advised us that there is not much he or other Labor backbenchers can do (though information and support would still be helpful), and even Liberal backbenchers can do little. Government ministers certainly have the most influence. However many backbenchers of both parties are against exploitation of the Reef and your letters encourage them to raise the matter in Parliament.

To get in touch with the campaign to save the Reef, contact:

Queensland:
Eddie Hegerl, Littoral Society,
PO Box 82, St Lucia,
Brisbane.

Melbourne:
Phillip Sutton,
Environment Action Centre,
118 Errol St., North Melbourne.
Vic.

Barbara Hutton, with advice from Eddie Hegerl and Brian Appleford.

Sources

1. R. Sandbrook, "Some factors to be considered in assessing the impact of oil on the marine environment": International Institute for Environment and Development (27 Mortimer St. London W1).
2. Moore et al, "A preliminary assessment of the environmental vulnerability of Machias Bay, Maine, to supertankers": MIT Report no. 162, 1973.

FISH

FOOD FOR THOUGHT

When I was a kid living in a small Tasmanian town on the north coast I believed in four things; the easter bunny, father christmas, god and fish.

Since then I have learned that the easter bunny is a fictitious lagomorph[1], father christmas an invented philanthrope and if god created the human species s/he should be charged with malpractice. But my faith in fish has remained undiminished. There is empirical evidence that they exist as there was in the tasmanian town I lived in.

The economy of the town was based on fishing and it was not unique for it. Thousands of villages throughout the world have been founded upon and survived upon the ready availability of fish. Fish therefore are credible. Not only that, they are reliable. Fish do not go 'ho ho ho', deliver chocolate eggs or create universes — they simply stay slippery, scaley, and provide about 70,000,000 tons of protein to the world annually. (Some people say it could reach 100,000,000 tons with safety — some people are sometimes wrong. Often.)

But — there are changes in the world of fish. The changes not only emanate from millions of tons of pollutants entering the oceans annually; they are also a direct result of overfishing.

After the second world war nations began investing far more in their fishing fleets and fishing much further away from their coasts. Fishing became highly specialised and made use of the most modern of technological equipment — but nobody bothered to tell the fish. The fish *should* have been told; "populate or perish!"

Fish, it now seems, are not keeping up with the times, although they cannot necessarily be blamed. After all humans went into massive scale fishing without first being sure of the quantity available. Like whaling, action on diminishing fish stocks was and still is, only taken when a fishery became severely depleted.

The collapse of fisheries has not only affected little towns around the globe, it has precipitated three "cod wars" between Iceland and Britain, caused the closing of various species fishing areas all over the place, and "forced" many countries to declare 200 mile (320 km) exclusive fishing zones off their coasts.

As herring, rock lobster and flounder become more difficult to find the fishing industry goes seeking octopus, king dory and krill yet there is no endless supply of these fishy things either, and no-one can accurately say just how much is actually available. What happens when these "resources" run out? Father christmas, the easter bunny and god would be flat out resurrecting them.

So what's the point?

The "point" I have been so long in reaching during this essay is about to rear its head.

When I was a kid living in a small town on the north coast of Tasmania I believed that fish were stupid, legless animals and that no matter where you went you would find them in huge concentrations. (Providing where you went was aquatic.) Up until recent times this view was pervasive; it was the only reasonable one to have. The collapse of the peruvian Anchovetta fishery and others proved that wrong.

It is now obvious that if fishing goes on at its present rate, and in fact the capital invested in fishing is increasing, we can expect to run out of conventional stocks in a very short time. This might not matter if radiation gets us first but if it does not human beings will want to eat.

There is only one month's food in reserve for the whole world in the whole world. The climate *is* changing and one globally bad harvest could see us all starving. Already we have, in the names of progress; posterity, prosperity and profit over-grazed vast tracts of the planet, we have caused erosion and contributed to deserts, we have cut down forests and polluted rivers. We have persecuted, enslaved, and destroyed other human beings. We have destroyed whole species of animals. We are rapidly losing a planet but gaining a derelict.

Throughout history the sea has been a prime producer of food for

*Lagomorphs: hares and rabbits — Ed.

Frozen fish in factory's 1000-tonne capacity refrigerated store waiting to be processed.

humanity. Properly controlled fishing could well see fish and seafood lasting indefinitely – but could it be too late?

Twice so far I have inferred that it is and as fishery after fishery fails it seems perversely proper to be a prophet of doom. So I am going to do a turn about and wax optimistic. Although my optimism requires a degree of faith.

An F.A.O. fisheries atlas produced in 1971 showed that out of about 131 world fisheries for various species, 76 were intensely exploited, 25 moderately exploited and 30 relatively unexploited. Since then the fishing interests of the world have moved to take advantage of the last two categories. They are also entering into areas of "unconvential" resources such as krill. This, of course, is not good news. But it can be the basis of a different attitude towards fishing and fisheries.

With the advent of 200 mile exclusive zones (a fact of life to which I am opposed), countries have gained the "right" to control and regulate fisheries in their areas. In many cases the countries are going to be interested, possibly for the first time, in knowing how much fish is theirs, its economic worth and its potential. They are (we hope), going to be interested in the maintenance of stocks and the protection and rehabilitation of those that are endangered. All of which will be good for the fish.

Two hundred mile zones also, for all the injustice inherent in them and their declaration, may serve to bring together countries sharing stocks of migratory fishes so that, to reap the benefit the fishes bring, the countries must work together for their preservation, forming conventions and working on research and stock assessment programs. (So harmonious.)

Another way of protecting fish stocks but far less popular is for people to stop eating fish where and when it is not necessary. For example it is not really necessary for most city dwellers of Australia and America to eat as much fish as they do and it would be much better for the recovery of many species if we stopped.

But it's hard to see this happening. Around the world now, no less in Australia, the multinationals are moving into fishing and processing and the subsequent promotion in a continuously increasing way. This expanding trend has led the smaller companies into expansion programs and will continue to do so. What we need is for a couple of them to go broke due to fish shortages, or an outbreak of scabies among fish-eaters, or better still a fullscale attack from the sea by fish disenchanted with the results of trying to "populate or perish".

What is needed more than anything else though is world-wide fisheries covention having control over all apsects of the "industry" including such things as moratoriums over fishing certain species and areas, the monitoring of trends, and control over distribution and prices. I am not talking about another International Whaling Commission but a genuine conservation and preservation organisation.

Food, as I said earlier, is in very short supply throughout the world, and ways must be found to better distribute it. But there are some paradoxes too, not the least of which relates to a country with a very high poverty level. India. In 1975 India landed 2,328,000 tons of fish. It promptly exported half of it.

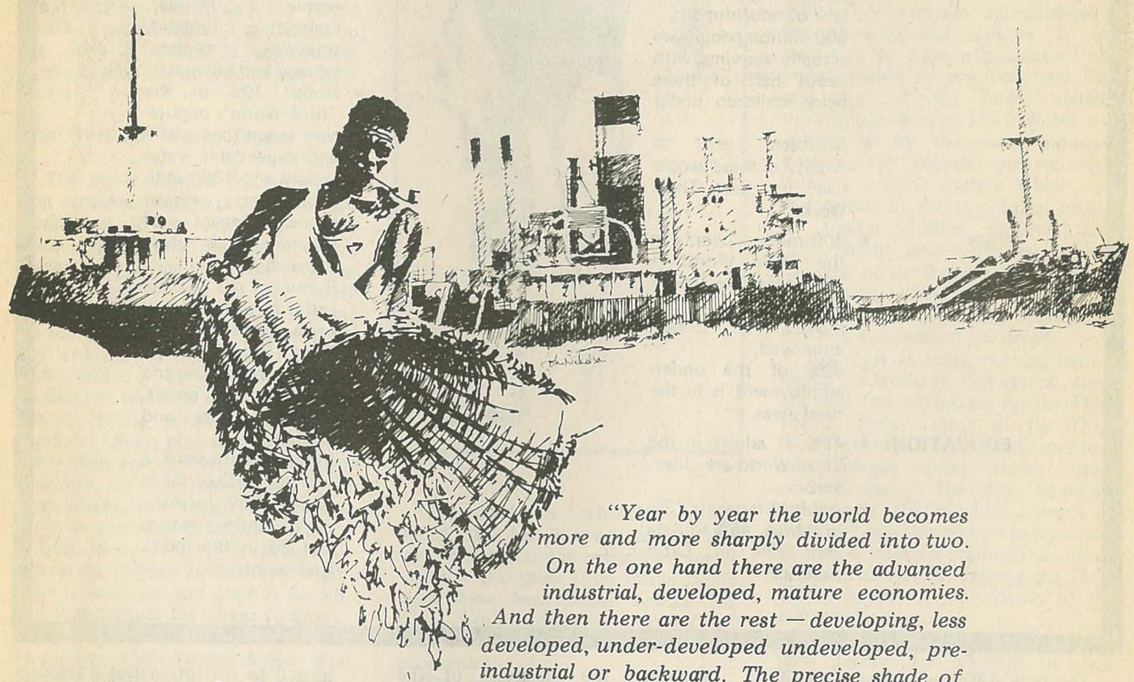
Seafood has a very special place in the human diet of many people in the world and is often the only food available. When that goes neither whatsisname or father christmas will be around to help. It need not happen.

When I was a kid etc, apart from my beliefs, I held that it was axiomatic that human beings were good and kind and would not let bad things occur to the world and each other. I am not so innocently foolish now. Just foolish. But I still believe that there is sanity in the world.

It just needs a kick in the bum to to help it along.

Brian Appleford.

THE MYTHS OF WORLD TRADE



"Year by year the world becomes more and more sharply divided into two. On the one hand there are the advanced industrial, developed, mature economies. And then there are the rest — developing, less developed, under-developed undeveloped, pre-industrial or backward. The precise shade of euphemistic description is unimportant; for the basic division is of course, one between Rich and Poor . . .

. . . It is important to see the present economic gulf between nations in historical perspective, for it is essentially a modern phenomenon, the product of roughly the last two hundred years. This very brief time span in the economic history of mankind has witnessed changes so profound as to render it radically different from all that had gone before . . . "

—Peter Donaldson: "Worlds Apart: The Economic Gulf Between Nations"

THE MYTHS OF WORLD TRADE

What are the facts of the The Third World?

HUNGER:
- ★ 2000 million people or about half of the world's population – are badly nourished and about 10,000 people a day die from lack of nourishment.
- ★ 500 million people are actually starving, with about half of these being children under 5.
- ★ Nineteen out of twenty of these people live in the Third World.

JOBS:
- ★ 300 million people in the Third World – 35% of the total labour force – are unemployed or underemployed.
- ★ 80% of the underemployment is in the rural areas.

EDUCATION:
- ★ 48% of adults in the Third World are illiterate.
- ★ Adult illiteracy is 73% in Africa, 46% in Asia and 23% in Latin America.

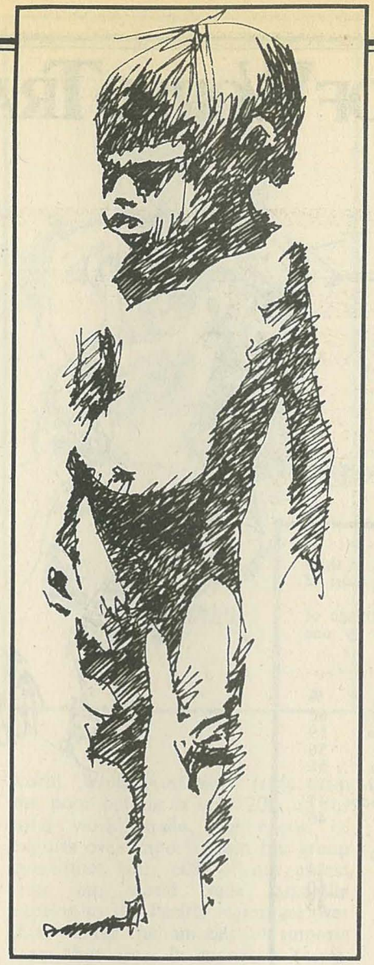
HEALTH:
- ★ 1,600 million people are at constant risk of suffering ill health and are without access to proper health care.
- ★ Malnutrition is the main source of ill-health with other killer diseases being dysentry, influenza, tuberculosis, pneumonia, measles, malaria, typhoid, smallpox, cholera, leprosy and bilharzia.
- ★ About 70% of the Third World's population is without a safe and dependable water supply and 1000 mill. people are without proper means of sewerage and refuse disposal.
- ★ 8 out of 10 farmers and 3 out of 4 shanty town dwellers in the Third World collect water for drinking and washing from ponds, streams, rivers and ditches.
- ★ Infant mortality is 170 per 1000 births in Africa, 107 in Asia, 70 in Latin America and 25 in the industrial countries.

The typical Western response to all this is that whilst the plight of the world's poor is very sad, their problems don't have anything to do with "us". Affluent citizens from the world's industrial countries (such as Australia) keep the world at arm's length as they continue with their petty ambitions – a house, a family car and their 2.3 children. Their world view is supported by a series of myths which enables them to pin responsibility for world povery on the poor themselves, and keep moral discomfort to a minimum as they keep their heads well buried in the sand.

However, the life-styles of the citizens of affluence and the citizens of poverty are undeniably linked to each other in ways that have generated, and now perpetuate the gross inequalities that constitute world poverty. As the "New Internationalist" states:

- ★ their problem of hunger is connected to our world of wealth. For their land is often devoted to growing flowers, vegetables and fruit for us, when more than 500 million people suffer from malnourishment.
- ★ their problem of poverty is connected to the international trading system that works for us. The prices of their commodity exports have dropped compared with the prices of our manufactured exports.
- ★ their problem of massive unemployment is connected to our world of expertise and technology which allows machines to replace men and women at work.

The people of the West ignore these facts at their own risk. Tarzie Vittachi warns us that *"For more than a billion human beings, the vaunted values of social stability are meaningless because their existence is threatened every day by their inability to feed themselves, clothe themselves, shelter themselves tolerably and to see any future for their children. The winds of change are blowing in the Third World. The myths of the complacent, affluent consumers of the West are toppling as the people we are exploiting are standing up and demanding a new world order."*



In the last issue of "Chain Reaction" I looked at the myth of world hunger. What I want to do in this article is to look at another of the links between the industrial world and the Third World – world trade – and examine the ways in which it consistently works against the interest of the Third World.

The Myths of World Trade

The Myth: Almost from our very first economics lesson at school we are introduced to the idea that world trade is an exercise designed to bring mutual advantage to both trading partners. It is one of the most ingrained of Western myths. It is based on the premise that the best way for any country to maximise its gains from trade is to specialise in the production of those items in which it has a natural advantage. Thus, for example, Ghana produces cocoa more easily than does Britain, which in turn produces car tyres more easily than does Ghana. It is totally unnecessary for both countries to be self-sufficient in both items. It is much cheaper for Britain to import cocoa from Ghana than it is to try and grow it herself, and it is cheaper for Ghana to import car tyres from Britain than it would be to produce them herself. A good deal for both parties.

The logic is disarmingly simple – as Earl Butz, a former US Secretary for Agriculture has stated: "Trade is like love. It takes two to make it work." According to his analogy the two love-makers are, on one side of the nuptial globe, the Third World countries who supply raw materials and primary products to their partners on the other side, the industrial nations, who in turn provide the Third World with manufactured consumer goods, capital goods and expertise and technology.

The Reality: It is a nice theory, but world trade just does not operate this way. Right from the period of colonial contact, the gains from international trade have been biased against the Third World, and have always served the needs of the established industrial economies.

The apostles of free trade talk as though this law of comparative advantage is a God-given and immutable property of the world. However, there is nothing *"given"* about the way the poor people now use their land. Frances Moore Lappe and Joseph Collins state quite bluntly that *"land use represents a choice by people, not by nature . . . One of the most oppressive food myths is that many of these countries can grow only 'tropical crops'. In reality they can grow an incredible diversity of crops – grains, high protein legumes, vegetables and fruits . . . What United Brands, Standard Fruit (Dole) and Del Monte call 'prime banana land' turns out to be first class agricultural land – flat, deep soil, well-watered, suitable for a fine range of food crops. In fact, when United Brands and Standard Fruit abandoned their larger banana plantations in Honduras' Rio Aguan valley, landless peasants settled in and grew corn, rice and beans."*

The present world order was forced on the Third World primarily by British and European, and later by American and Japanese colonial policies. To ensure industrialisation for the colonial powers it was necessary to have a guaranteed and cheap source of raw materials. This was one of the major colonial motivations as the Third World was carved up by the rising industrial powers. The colonial powers established a trading pattern which they maintained by direct political control – Joseph Collins observes that *"colonialism destroyed the cultural patterns of production and exchange by which traditional societies in 'underdeveloped' countries previously had met the needs of the people."*

Not only is there nothing natural about the world trading system, there are very few advantages for the Third World. Today, most of the Third World countries have gained political independence from their former colonial masters. However, the legacy created by the colonial pattern of trade still survives, and probably works as a more effective method than direct political control for keeping the Third World bound by the needs of the industrial nations.

Most countries in the Third World now depend for 50–90% of their export earnings on only one or two primary commodities or raw materials. In 1972, coffee brought in 53% of Columbia's foreign exchange, 78% of Burundi's, 50% of Rwanda's, 50% of Ethiopia's and 61% of Uganda's. About eleven countries depend on coffee for more than 25% of their foreign earnings. Bananas, the most important fresh fruit in international trade, between 1970–72 accounted for 58% of total export earnings of Panama, 48% of Honduras', and 31% of Somalia's. The depth of such dependence is further indicated in Table No. 1.

THE MYTHS OF WORLD TRADE

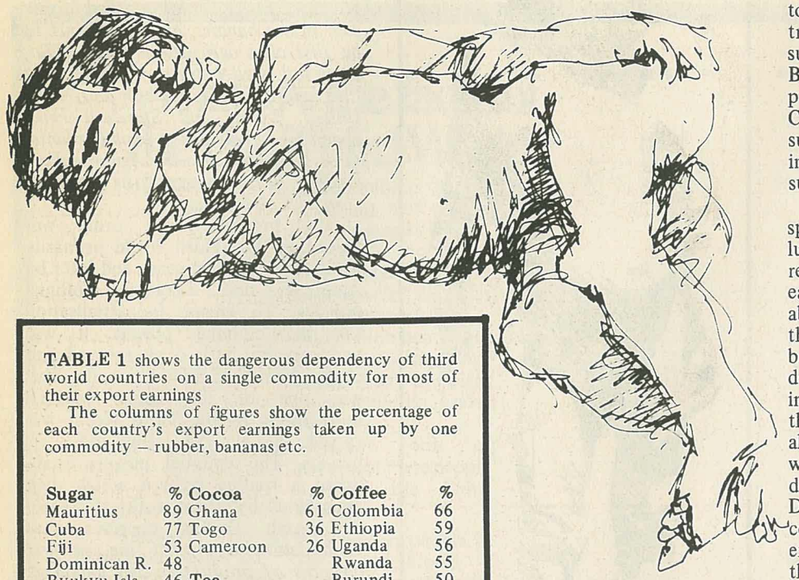


TABLE 1 shows the dangerous dependency of third world countries on a single commodity for most of their export earnings

The columns of figures show the percentage of each country's export earnings taken up by one commodity – rubber, bananas etc.

Sugar	**%**	**Cocoa**	**%**	**Coffee**	**%**
Mauritius	89	Ghana	61	Colombia	66
Cuba	77	Togo	36	Ethiopia	59
Fiji	53	Cameroon	26	Uganda	56
Dominican R.	48			Rwanda	55
Ryukyu Isls.	46	**Tea**		Burundi	50
Barbados	42	Sri Lanka	56	El Salvador	45
				Haiti	40
Bananas		**Rice**		**Cotton**	
Martinique	55	Burma	43	Tchad	74
Panama	54	Khmer Rep.	48	Sudan	60
Ecuador	48			Egypt	43
Honduras	44				
Oilseeds and Oils		**Natural Rubber**		**Tin**	
Gambia	79	Malaysia	43	Bolivia	53
Niger	63	Indonesia	23	Malaysia	24
Senegal	45				
Copper		**Iron Ore**			
Zambia	96	Mauritania	85		
Chile	72	Liberia	70		
Zaire	68				

Sources: FAO, Trade Yearbook; United Nations, Monthly Bulletin of Statistics, May 1973.

Frances Moore Lappe pin-points the problem with great accuracy when she states that: *"Concentration on a limited number of crops creates the vulnerability that is the hallmark of the economic and political position of underdeveloped countries. Vulnerability means an inability to control one's own destiny."*

Third World countries are vulnerable to massive price fluctuations in their exports. The demand for primary products in the West is notoriously unstable. The volume of exports from the Third World always corresponds to periods of *"boom"* and *"slump"* in Western economies, which leads to peaks of high demand and high prices, and troughs of low demand and low prices. Cuba, for example, depends on sugar for about 75% of its export earnings, and supplies about 25% of the world's sugar. Shortages in 1975 sent the prices rocketing to $700 per ton, with the result that non-traditional suppliers started to plant sugar, such as countries in the EEC. By 1975, there was a glut and the price plumeted to $170 per ton. The Cuban economy is so dependent upon sugar for its export earnings that it is impossible to cushion the impact of such violent price-fluctuations.

The cocoa market is a classic speculators' market, with prices lurching all over the place. Ghana relies on cocoa for 60% of its export earnings, and supplies the world with about 30% of its cocoa. As producers, they are in a very weak position, because cocoa is a luxury product, and demand falls dramatically in the industrial countries during slumps in their economies. This makes planning almost impossible. In the late 1950's when cocoa prices were high, Ghana decided to double its production. Development plans were drawn that counted on the increased foreign exchange earnings. But, as the prices that Ghana had to pay for its imports rose steadily, the price it could get for cocoa seesawed. Up to $1,000 per ton one year and down to less than $400 another; up to $1,000 again and down to less than $600 later. The overall decline in earnings from the mid-fifties has been estimated at 80%. Ghana's development plans had to be thrown out the window. In late 1976, Cuba announced that the sudden collapse of sugar prices (from 64 cents to 6 cents a pound in 18 months) would make it necessary to revamp its five year development plan.

Just to make sure that the trading system works in their favour, the industrial countries have an elaborate set of tariffs which they levy on Third World exports in order to protect their own industries. In conjunction with the development of synthetics this has had a disastrous effect on many Third World economies. Bangledesh has been one of the hardest hit in this area. She depends on jute for the bulk of her foreign earnings, but is finding it increasingly difficult to find markets. Tariffs against manufactured jute are high in countries like Britain which retain their own jute industries, buying raw jute, processing it and selling it. In Britain, it is a small and ever shrinking industry centred around the Scottish towns of Dundee and Arbroath.

Processed jute from Bangledesh would sell at considerably less than British jute because of lower production costs, so it is subjected to tariffs of up to 30%. Natural jute from Bangladesh has been discarded by many countries in favour of synthetics like polyprophelyne. Natural jute was once used in the backing of 95% of all tufted carpets in the E.E.C., but today it is only used for about 20%.

Thus it is a myth that the Third World benefits from an export-oriented economy. It is equally falacious to argue that it benefits from its reliance on the industrial nations for imports of manufactured goods, which are necessary to meet many Third World needs. To be able to afford the imports it needs, a Third World country has to rely on the foreign exchange earned through the sale of its exports. The prices of the rich world's manufactured exports to the Third World have risen consistently since the 1950's, whilst prices of Third World commodity exports have declined almost continuously during the same period. The only people to benefit from this are the companies and consumers of the rich industrial countries.

In recent time the Third World has seen some of the prices of their imports rising by leaps and bounds. Food prices rocketed after massive Soviet grain purchases of US wheat in 1971, and in 1973 OPEC oil rose by 400%, and very soon the price of manufactures was rising as well. Food, oil and manufactured goods are all essential and unavoidable imports for the poor world, but the prices of their exports have risen by far less. The consequences of this situation are a major reason for the perpetual underdevelopment of the Third World.

Australia's own trade with the South Pacific is one of the many areas of world trade where the inequalities of the relationship work against the interests of the Third World. The most striking feature of Australia's trade with the Pacific is the imbalance in favour of Australia. Generally speaking, Australia has had a favourable balance of trade, meaning that it exports more to the world's trading nations than it imports from them. This is based to a large extent on its trade with the poorer nations of the

world. While Australia's trade with the poor nations is only 20% of our total world trade, the excess of exports over imports from this group constitutes over 60% of our excess from our world trade. Australia exports to the Pacific region are over three times the amount of imports from that area. In monetary terms, this meant that in 1974, for example, there was a deficit in Australia's advantage in its trade with Fiji of $F54,250,038. Australia accounted for well over half of Fiji's trade deficit. This pattern is repeated throughout the region. In 1974, Australia supplied 43% of imports to the Solomon Islands, whilst buying only 3.4% of its total exports. For 1973–74, Australia had a trade excess with Tonga of $T4.7 million.

The Consequences: The consequences of the inequalities in the world trading system are more than a tale of trade figures and prices. They don't tell of the experience of the people and the inroads that are made into their lives. One of the most stark reminders of this is the effect that the world fishing trade is having on small Third World fishing communities. It shows how the demands of the affluent consumers of the world are translated into an exploitative system of trade, and in combination with Western technology and capital result in Third World communities being denied their food, employment, income and housing.

Japan is the world's foremost fish catching and fish consuming nation. Hampered by a limited supply of land suitable for planting crops or grazing livestock, the Japanese rely on fish and other marine products for more than half of their annual protein intake. Her total fish production was 16% of total world catch in 1973, and was hauled in by a fleet of about 300,000 powered fishing boats.

Most of the Japanese catch – up to 45% – came from the open sea. The declaration of 200 mile Exclusive Economic Zones by various countries as part of their national waters has threatened this source. The United States and Russia in particular have, by this action cut down Japan's total catch by more than one fourth.

Japan's own resources have increasingly become unavailable for fishing. The concentration of industrial complexes on reclaimed coastal land had intensified the contamination of the air and the sea. Among the water bodies with observed high levels of mercury and other industrial waste are Tokyo Bay, the Inland Sea, and the rivers that flow into Lake Biwa.

These factors have abetted each other in constricting Japan's sources and markets for her fishery products. Hunting for solutions, the Japanese authorities are continuing negotiations with various countries on fishing quotas and encouraging the diversification of their people's fish diets. Another solution is finding new sources in the Third World, especially the Philippines.

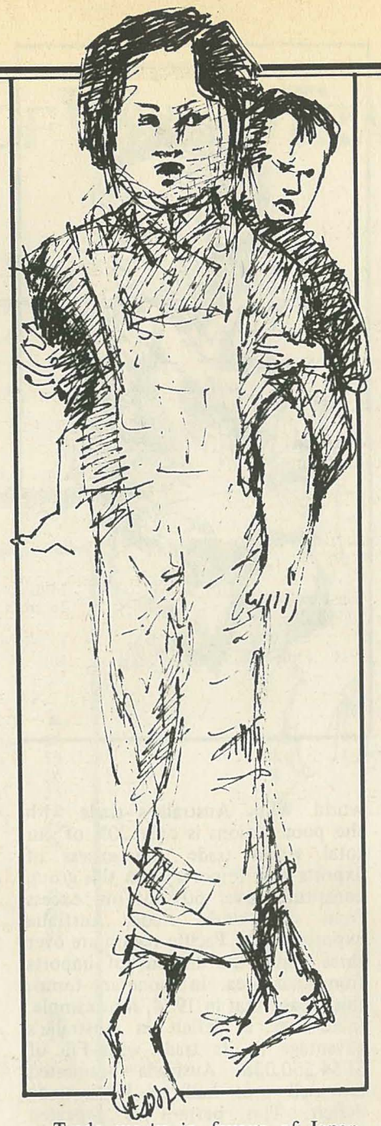
The Philippines is a country with more than 1½ million square kilometres of marine water, over 350,000 hectares of fresh water lakes, reservoirs and rivers, and some 527,000 hectares of swamplands. As such, it is a prime target for Japanese fishing interests. The Filipino Government has only been too happy to oblige. In 1975, the Government enacted a Fisheries Decree aimed at promoting the "integrated development of the fishing industry" in the country. A five year plan was drawn up, and the stated objectives were self-sufficiency, increased exportation and optimum

utilisation and productivity. The reality behind these lofty ideals had been the impoverishment of the Filipino fishing communities for the benefit of Japanese fishing companies and consumers.

Frieta Bautista and Gerry Anigan introduce one of these Japanese fishing initiatives in Navotas, *"a strip of land along the northeastern bank of Manilla Bay . . . Rows of squatter shanties along the Malabon river accentuate the 'human settlement' problem. The river itself is quite unique: its colour changing from red to green to blue to black depending on the dye and chemicals thrown off by nearby factories. A nostalgic longing fills the residents when they recall the time they used to swim and fish in that river, and even navigate small boats on it. Now they can do none of these things."*

Just behind these shanties, is the Navotas Fishing Port and Market, a complex being renovated and enlarged with the help of a $5.5 million loan from the Asia Development Bank. The Tokyo Construction Company is undertaking the project. Once finished, the fishport at Navotas will be the first international one in the country, and will offer all the major industrial support facilities for fishing – slipway, cold storage, fish processing plants – linked by a series of conveyor belts that would facilitate the flow of goods throughout the complex. Once the complex is fully mechanised, only about 75 workers will be needed to oversee the operation of the conveyor belts. That is only 2.5% of the total number of fish haulers presently working in the port.

The dredging of the bay to make it deep enough for commercial vessels to dock and the reclamation of land from the seas has led to the blocking up of the Navotas River, and contributed to the worsening condition of the Malabon River. It has also deprived many of the local people of their source of income as there is no longer the need to ferry the catch from the boat to the shore. The same large vessels have edged out the small fishermen who used to fish in the bay: only fish suppliers whose boats are at least three tons can enter the port now. Obviously, the port is primarily intended to cater to big business.



Trade works in favour of Japan. Between 1970 and 1976, Japan consistently imported more fish from the Philippines than she exported back. Philippine fish exports to Japan consist primarily of shrimp, prawns and lobsters, with tuna fish, seaweed, cuttlefish, shell products and other kinds of fish making up the rest. In return Japan exported to the Philippines canned mackerel and sardines. Canned mackerel imports from Japan caused a furor in 1975. Groups of local fishermen complained about the sudden proliferation of the canned goods in the local market, with prices some 30% lower than those for the preceeding two years, such that the consuming public preferred canned mackerel to fresh or dried fish.

In Samar, thousands of local fishermen sent a petition to Prime Minister Ferdinand Marcos, which read in part: *"The conditions of the sea from which we draw our livelihood . . . are extremely hard and rapidly deteriorating. Since the operation of trawls and deep sea purse seiners, we have felt the easy decline of our fish catch from scarcity to extinction . . . There have been too many occasions when our simple fishing equipment . . . has been trampled upon and damaged . . . The majority of the masses have been adversely affected by the increases in prices of commodities, including that of the price of fish which is exported by these trawl owners to other provinces in order to acquire a juicier income . . . Because of these hardships and obstacles, we sometimes lose hope."*

Thus, we can see that world trade is one of the many ways that the rich nations of the world have exploited the poor nations and conditioned their current state of underdevelopment. The facts of the Third World that appeared at the start of the article do indeed have something to do with "us", the affluent consumers of the rich world. Our life styles have been based on exploitation, and oppression of large sections of the world's population.

Written by Peter Leman
Illustrations by John Nicholson

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Seeds for Change
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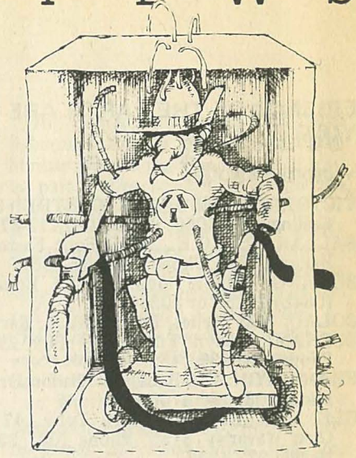


"Now and then a book appears that marks an acknowledged turning point in human activities. History will judge, but Seeds for Change has many unique features that could give it the stamp of such a book."

So begins the publicity leaflet for *"Seeds for Change – creatively confronting the energy crisis"*. A little pretentious perhaps, but there is no disputing that this is an extraordinary book. Energy is certainly an 'in' topic; there are more papers, books and magazines on the subject than one could read and remain a sane human being.

What makes *Seeds for Change* stand out amongst this morass of printed words?

Firstly it is Australian. It is specifically about Melbourne – although it contains much information relevant to all of Australia and its general social critique is applicable to all industrialised societies.

Secondly it is comprehensive; the six authors represent a variety of fields and their combined knowledge gives the book a very detailed factual basis.

Thirdly, and perhaps most importantly, the book integrates the technical and social aspects of the energy question.

To date most material written in response to the energy crisis has been from one of two limited perspectives. Much material has been written from a technical perspective analysing global or national energy problems and usually proposing technical solutions such as oil-from-coal, nuclear power and high technology energy conservation measures. The alternative reaction has been to concentrate on the purely personal response – how the individual can conserve energy or become more self-sufficient.

Seeds for Change certainly has the technical details on energy problems. It is in fact a good deal more comprehensive than the Victorian Government's *Green Paper on Energy*. But it also analyses the social problems of our high energy lifestyle and assesses proposed changes to our use of energy in the light of their social impact as well as their technical desirability.

Seeds for Change is the major (but by no means the only) project of the Conservation of Urban Energy Group established by the Conservation Council of Victoria. The group has developed what is called the CUE model for a low energy Melbourne. This is a plan for restructuring the city to enhance the role of locally based activities and decrease the isolation of car-based urban sprawl. This would improve the quality of urban life and reduce the demand for petrol (the most urgent aspect of the energy crisis as it affects Australia). It should be emphasised that the model is based on gradual redevelopment around existing rail services and does not require massive physical redevelopment. Many important aspects of the model (e.g. neighbourhood houses) are based not on new physical facilities but on encouraging new social patterns to use existing facilities more creatively.[1]

The book is in four parts;

Part One – The Energy Gap, analyses in considerable detail Australian and Victorian energy resources and the problems associated with developing them.

Part Two – Building a New Perspective questions the assumptions underlying current energy planning and shows how by challenging these we can develop solutions that solve both physical and social problems.

Part Three – The Model explains in detail how changes to buildings, land use planning, industry, transport and urban infrastructure can be integrated to provide an alternative city structure that enhances the quality of urban life and reduces energy consumption.

Part Four – The Seeds are There shows that movements towards the types of community based services advocated in the book are already being actively pursued in many parts of Melbourne.

Seeds for Change is an invaluable reference work. Its copious tables, graphs, diagrams and appendices provide the facts necessary for informed debate of the numerous issues raised in discussing energy strategies for a sustainable future.

If I had to make one criticism of the book it would be that it lacks any discussion of political strategy. While the proposals in the book are highly desirable there is no analysis of the vested interests opposing such enlightened policies and no suggestions on political action to bring about their implementation. But this is really the job of the whole environment movement and a thorough reading of *Seeds for Change* is an invaluable preparation for the task.

At $10.00 (for 540 pages) *Seeds for Change* is not a cheap book, but it is certainly excellent value.

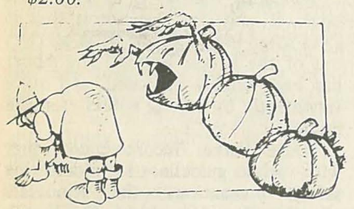
Jack Gilding.

[1]For a more detailed explanation of the CUE Model see Chain Reaction, Volume 3, Number 1, 1977.

Orders of five or more copies of Seeds for Change are available direct from the publisher, Patchwork Books, 118 Errol Street, North Melbourne 3051 for $6.50 each. Why not get together a group of friends, put in an order and set up a group to discuss the book amongst yourselves?

Why Spray at all?

"Pumpkins, Poisons and People" by Dallas Twigg, Conservation Council of Victoria 1978 $2.60.



"Observable damage (to crops) is better than hidden dangers (of spraying)."

The above quote from this timely 40 page booklet sums up its philosophy. Dallas Twigg sets out to prove that *"a serious hazard to human health exists in this State through urban use of chemicals"* with a vengeance. The result is to me a rather disjointed but hard hitting and important document.

For too long the environment movement has failed to direct attention in Australia to the ever spiralling use of insecticides, fungicides and weedicides in both home gardens (on which this booklet concentrates) and commercial agriculture. This booklet makes a worthwhile start. For instance it deplores

- ★ the heavy emphasis placed upon chemical methods of pest control in magazines, newspapers and gardening books,
- ★ the lack of sufficient testing of chemicals before their release,
- ★ the dearth of information made available by manufacturers and retailers to home gardeners purchasing chemicals.

Dallas Twigg doesn't concentrate on showing the damage spraying is doing to our health stating this to be a "big unknown"; instead he urges us to err on the side of caution and he poses the question *"why spray at all?"*

Various alternatives are then discussed, including accepting lower yields and occasional disasters, companion planting, improving the soil to build up plant resistance, and using so called safe sprays. He is particularly critical of the Department of Agriculture in Victoria, pointing out that it concentrates almost solely on chemical methods of pest control, and criticising its joint publishing, with the Agricultural and Veterinary Chemicals Association, of a booklet entitled *"Vegetable Pest and Disease Control Guide"*.

"Pumpkins, Poisons and People" ends with a list of over 50 recommendations to the Department of Agriculture, the Health Department, Garden Clubs, Retailers and Readers. I found many of them, such as better community education on the hazards of pesticides, restrictions on advertising, and the banning of the sale of pesticides in supermarkets, eminently sensible. Others such as a statement that the Department of Agriculture should be *"quite free of commercial incentive"* I disagreed with, as I believe they also have a responsibility to Victoria's 75,000 farmers – but I entirely agree that home gardeners have been sorely neglected. A recommendation that *"all retailers of pesticides undergo compulsory training by the Department every year"* I found unrealistic, and the statement *"Before you rush out and buy pesticides, consider carefully whether your infestation is of sufficient scale to warrant treatment"* to be sound common sense.

Read this booklet for yourself and make up your own mind. As Dallas Twigg points out, if we don't consider this issue and press for further research on pesticides now, the list of *"Pesticides that have Caused Poisoning in Man"* (a study quoted in the book lists over 120) will keep on getting longer and longer.

Ian Pausacker.

Nuclear Madness

NUCLEAR MADNESS – WHAT YOU CAN DO! by DR. HELEN CALDICOTT (JACARANDA PRESS $4.95)

NUCLEAR MADNESS has three serious faults which I find detract considerably from what could have been a useful introductory book for those who know nothing about the dangers of the nuclear power and nuclear weapons industries.

The first is that it is written for Americans and although still relevant to the Australian public is not directed at them. The second, and more serious, is that the author frequently indulges in writing about what she has done to oppose nuclear power and unfortunately appears to exaggerate her contribution to the movement. I doubt, for instance, that she was wholly and solely responsible for initiating the Australian campaign against the French tests at Moruroa as she claims. And although I know she was active in both that campaign and the anti-uranium mining movement, she certainly was not, as she implies, the only nor the most active person involved. She was only one of many.

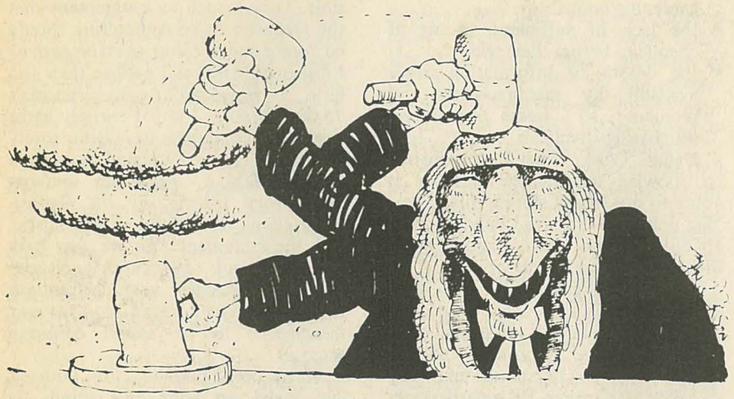
The other and perhaps most disturbing fault in the book is that although the title is NUCLEAR MADNESS – WHAT YOU CAN DO! very little space is devoted to what the ordinary person can do. We read a lot about what Dr. Helen Caldicott has done as a doctor, and a little about what Dale Bridenbaugh, Gregg Minor and Dick Hubbard have done as nuclear engineers, and possibly what other doctors and nuclear engineers could do by following their examples, but for the rest of us there is nothing. In the whole book there are only 2½ pages devoted to what the ordinary person has done in the past – marches, signature collecting, handing out leaflets. None of it is really very useful. There are no new ideas or inspirations.

Despite this Helen Caldicott has written a simply expressed, easy to read explanation of the nuclear power and nuclear weapons industries and their health hazards. None of it is new but she has put it together in a form suitable for those who want an introductory book on the issues.

The retail price is $4.95 which is rather excessive for this slim volume.

Linnell Secombe

Windscale Fallout
Judicial Meltdown and Plutonium Economy



Windscale Fallout by Ian Breach. Penguin special 1978.

There is no truth in the rumour that the Mining Industry Council is to make a new television series – *"Against The Windscale"*.

Indeed there is no indication that the Australian media is going to cover the Windscale issue at all. It is hardly to be expected that we will hear much about the problems of nuclear wastes in faraway Britain, when we hear so little about our own. Particularly in the Victorian media, Maralinga lingers on, unnoticed.

So this Penguin Special, about the Windscale Inquiry and its aftermath, is a very welcome arrival here.

For people who are only just beginning to read books on the nuclear power issue – this isn't the easiest one to start with. The early chapters are tightly packed with (very unnecessary) technical information. The later chapters, covering the inquiry itself and its wide political and legal implications seem to take up and carry further, questions raised in other books on nuclear power. (It's probably better to begin with *Red Light For Yellowcake* (F.O.E. Australia), or *The Menace Of Atomic Energy*, by Ralph Nader.)

Windscale Fallout examines the implications for the future development of nuclear power, and for democratic participation in decisions, of Britain's longest public inquiry.

The Windscale Inquiry examined the proposals of British Nuclear Fuels Ltd. to construct a thermal oxide reprocessing plant (THORP) at Windscale, and to bring into operation the non-thermal fast breeder reactor (FBR) at Dounreay in Scotland.

This technology would introduce Britain to the *"plutonium economy"*. The inquiry, conducted by Mr Justice Parker, was to examine and recommend on the proposals, taking into account the political, environmental, and social problems.

The full transcipts of the Windscale Inquiry have not been made public. The only public account is the summary by Judge Parker, in his report to the British Parliament.

Windscale Fallout is an important book, if only for the reason that it gives some indication of what was left out of the Parker Report. The report has been widely criticised, and quite vehemently by several witnesses at the inquiry.

Judge Parker recommended, that with various guidelines for monitoring safety precautions, the Windscale planning should go ahead. The British Parliament subsequently granted permission for the project.

Nuclear power won the vote – but did it win the debate? Ian Breach makes out a powerful case for questioning this: – *"Very few of the 146 witnesses who appeared before Justice Parker as objectors made non-scientific submissions. The significant 'moral' statements were almost all made within rigorously informed and prepared proofs of evidence."* Objectors ranged from locally based groups, the Cumbria County Council, the Town and Country Planning Association, to interest groups such as the U.K. Lawyers Ecology Group, and Friends of the Earth.

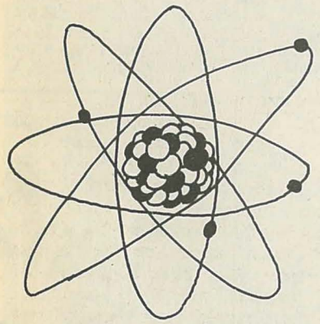
Amongst objectors who were dismissed in the Parker Report was the epidemiologist, Dr. Alice Stewart, with evidence on cancer statistics amongst nuclear power workers.

Completely left out, was the submission by Dr. John Davoll, director of the Conservation Society, and formerly an executive scientist with the pharmaceutical company, Parke Davis. Ian Breach reproduces Davoll's evidence in full:– a wide-ranging critique of the increase of energy supply as a solution to world problems. Davoll concluded that: – *"instead of deforming our personalities to fit a crowded and mechanized world we should begin to shape a way of life that meets human needs now, and does not foreclose the choices of our descendants in the future. This can be done only if we live with the renewable resources of the earth, and not beyond their limits"*.

Cross-examination of Davoll was brief, and as Breach shows, amounted to: – *"a micro response to what were macro points"*.

Breach outlines the progress of the inquiry, and examines the whole mode of the inquiry – how genuinely public was it?

In a chapter on *"chain reactions"* he outlines international opposition to nuclear power as it has developed in the past three years. He is not, however, optimistic that this opposition will prevail, with many governments still firmly committed to nuclear power.



Windscale Fallout is an appropriate title, for as Breach shows, the Windscale Inquiry, with all its inadequacies, set a precedent which it will be hard to ignore, for any democratic country contemplating the plutonium economy.

In less than a month after the Parker Report was published, Breach's file on reactions to it was five times the length of his book.

The most interesting "fallout" of Windscale will be the next public inquiry into Britain's F.B.R. program, to be held early this year.

Let's hope that Ian Breach will come to the party again, and tell us what happens, as thoroughly and as interestingly as he has done with this study of the Windscale Inquiry.

by Noel Wauchope

RESOURCES

These publications are available from FRIENDS OF THE EARTH, 366 Smith Street, Collingwood. Most of them are available at other state offices of Friends of the Earth.

Wholesale rates to friendly groups, people running street stalls etc. are as cheap as possible: usually 30–40% off the listed price. Phone us for details.

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CHANGING THE COGS: ACTIVISTS AND THE POLITICS OF TECHNOLOGY
(Brian Martin, FOE Canberra, 1979) $1.50

WHALES . . . AND THEN THERE WERE NONE?
(Kim O'Sullivan, FOE Australia, 1978) Basic information about whales: their behavior, their present plight, the Whaling Commission and what you can do. 50c.

GROUND FOR CONCERN
(Mary Elliot, FOE Australia 1978) The social, political and environmental implications of the nuclear fuel cycle — and some alternatives. Penguin bestseller. $3.95

URANIUM, THE LAW AND YOU
(FOE Australia 1978) Nuclear society necessitates a drastic loss of civil liberties! $2.50

NO EMUS FOR ANTARCTICA
Rolf Heimann (the artist who drew the cover of this issue) produced this collection of cartoons for FOE — humour and social comment. $4.95

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Fascinating collection of writings — scientific and poetic — on whales and dolphins. $10.00

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Alan Roberts, Gary Smith, Arena Publications 1977. 50c

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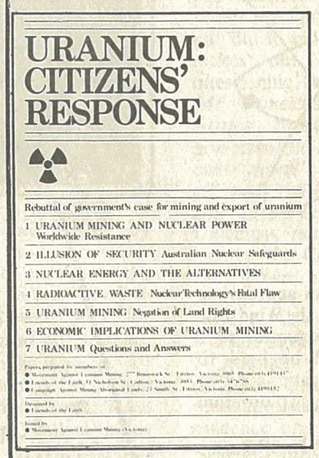

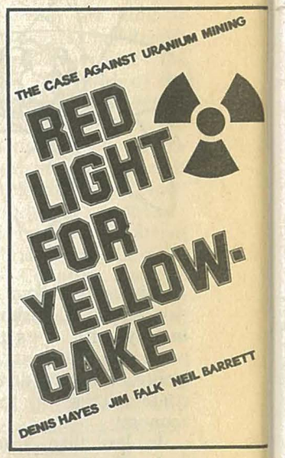

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Nuclear power is no answer to the problems of the third world. donation

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Plans for a huge aluminium refinery in WA will require vast quantities of electricity. Where will it come from? Nuclear power, says the state premier. donation

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STOP URANIUM MINING 30c
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WOMEN AGAINST NUCLEAR ENERGY 30c

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(Smiling sun symbol on white) $4.50

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(Mushroom cloud design) Short sleeves $4.50, Long sleeves $5.50

NO ONE GIVES A STUFF
picture of whales selling "Save the human" badges.
Long sleeves $5.50

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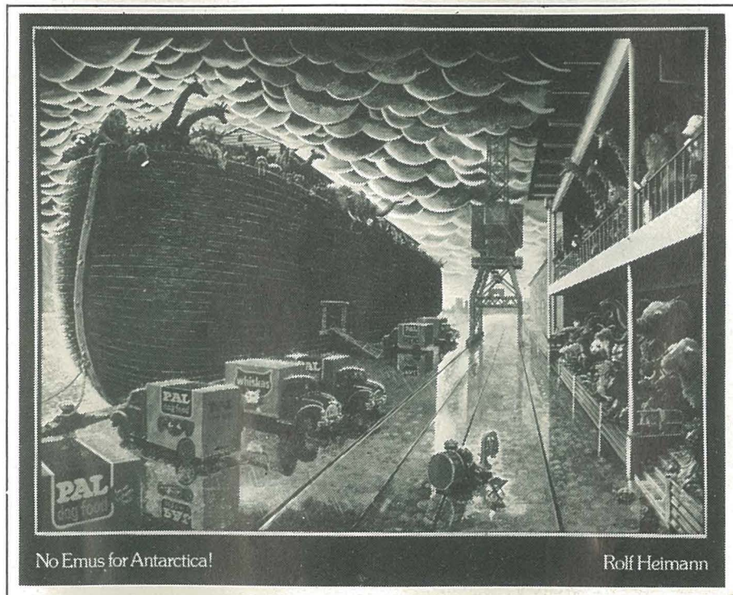
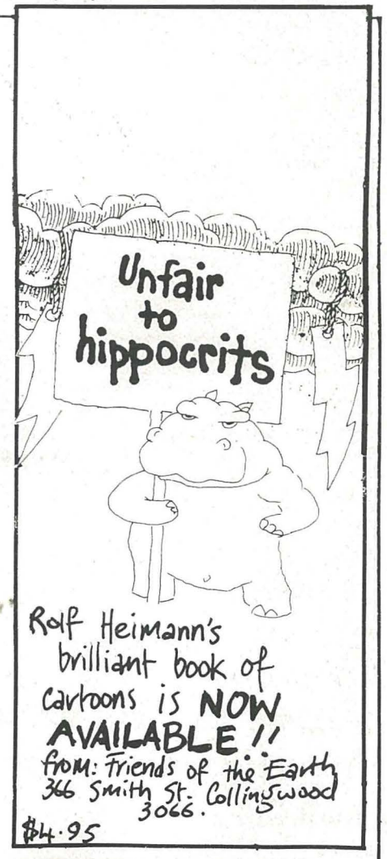


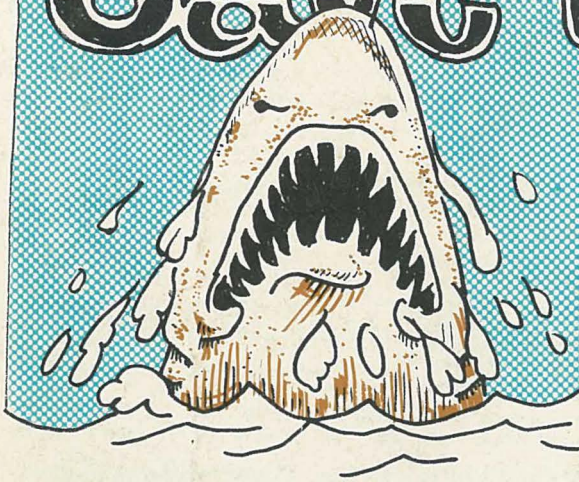
No Emus for Antarctica! Rolf Heimann

ROLF HEIMANN'S second cartoon collection "No Emus for Antarctica" is out now. 64 pages of curious and absurd drawings, subtle and unsubtle humour, puns and jokes. "No Emus for Antarctica" and Heimann's first cartoon collection, "Unfair to Hippocrits" are available from Friends of the Earth and more enlightened bookshops. Price $4.95, profits (if any) to FOE.

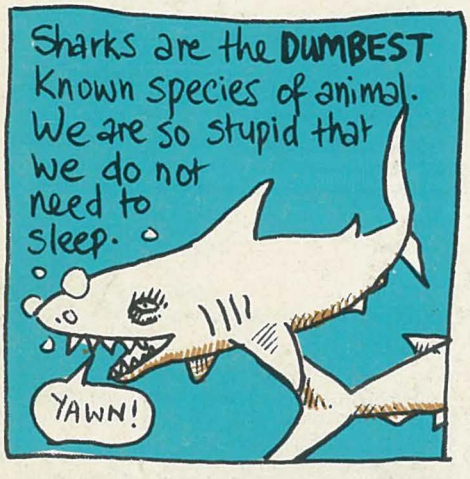
The author has also written a book on his experiences in the South Seas ("Knocking on Heaven's Door"), does cartoons for the NATION REVIEW and drew the cover of this magazine. Ask for "No Emus for Antarctica" next time you're at Friends of the Earth, or send $4.95 plus postage to 366 Smith St, Collingwood!

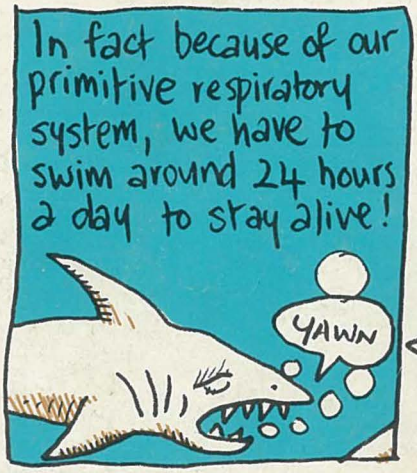


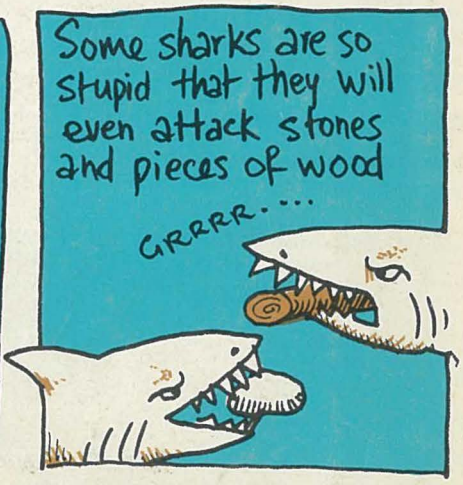
Save the Shark

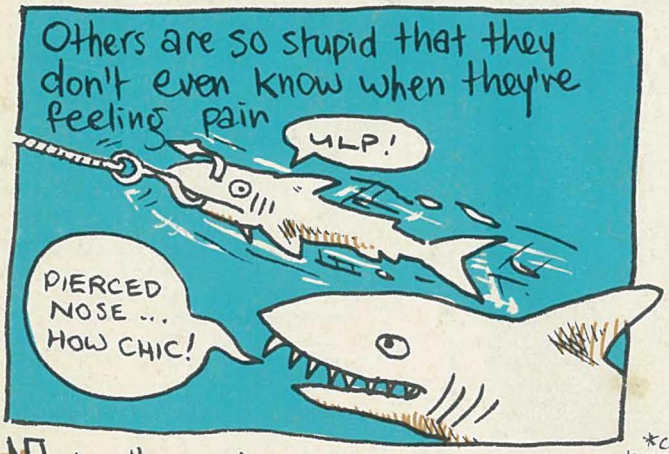


Everyone's been talking about saving whales, just because they're intelligent and becoming extinct. Hey everybody! What about us!!??









Every year hundreds of thousands of sharks are killed and eaten by savage human* beings....

*compare this with number of humans eaten by sharks each year!

Naturally such savagery has become part of our language (eg. **loan-human**) as well as part of our mythology.....

BY MICHAEL RUSHARK & BARBARA J. HUTTSHARK.

† The bastards also poison us with mercury!!!!