

The Anti Nuclear & Safe Energy Journal

# SCRAM

46



50p



**No Safe Level**

**p3**

**NUKES ~ This Failed Dream**

**p10**

**All Gone Rong ~ Hinkley B**

Collection *London Foundation*  
**p12**  
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Send contributions for inclusion.

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Anyone interested in resurrecting SCRAM South West with a view to campaigning against all aspects of the nuclear chain, especially in S.W. Scotland, and in campaigning on broader environmental issues contact:

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# Comment

In the middle pages of this issue (10-11) we have printed an article which shows what the effects of Torness will be on the coal industry in Scotland, and by extension, in the UK. Jeremy Adler has been reading SSEB Annual Reports and the Energy Select Committee's 1981 evidence and has noticed a major discrepancy in the promises made in the Select Committee by the SSEB Chairman in 1980 and the reality as published in the Annual Reports. Donald Millar claimed that the SSEB would burn about 8 million tonnes of coal per year until the turn of the century, with a slight reduction of 1m tonnes due to the Peterhead gas liquids burning in '83/'84. The 1983/4 figure was 4½m tonnes, and with the commissioning of Torness in '86/'87 and an (over optimistic) load factor of 70%, this figure will drop to about 2m tonnes, even without the closure of existing coal burning stations. Food for thought?

Another factor in the coal strike is power cuts. Because of the bitterly cold winter the CEEB has been experiencing record demands on its generating stations and they have boasted that, despite the strike, they have been able to meet the demand with no problems. If this is the case, why do they need Sizewell B? True, they will have to decommission the old Magnox stations soon, but that is going to cost an awful lot of money. They have argued that the oil-fired stations are too expensive to run except for peak demand, yet they are being run during this strike, so why can't they run them normally? If the strike has proved anything at all it is that an expanded nuclear programme is unnecessary.

## SCRAM

We have had problems over the last year. We accept that. The Journal has prospered, though publication dates have slipped, but the office has degenerated. The main problem was that, even though the Journal is bi-monthly, there is always a great panic over the last couple of weeks before printing.

So we had an emergency strategy meeting on January 15th to attempt to sort out all of the problems. Many of the people who have been involved in SCRAM in the past came to the meeting and loads of ideas were discussed. It was decided that to ensure the efficient production of the Journal SCRAM has to employ a full time worker and pay a wage. A steering committee was set up and Steve Martin, who has been working voluntarily for SCRAM for four years, was appointed to the post. Another worker is still desperately needed and a wage is available.

There will be a meeting at 7.30 on February 12th to formally appoint the Steering Committee. Come to the SCRAM offices in Forth Street if you are interested in joining the Committee, if you are interested in taking up the other post or if you are simply interested in SCRAM. All welcome.

Another decision made at the meeting was to close the Smiling Sun Shop. This was not a decision we took lightly. Long discussions have taken place over the past three months, but it has become obvious that the overheads outstripped the takings of the shop. It is hoped that SCRAM will continue a mail order service for energy books and pamphlets, and in the meantime we will fill all mail orders which arrive at the shop.

# No Safe Level

To coincide with the Australian Royal Commission's visit to London to hear evidence from British ex-servicemen who witnessed the British nuclear bomb tests in the 1950's, Greenpeace and the British Nuclear Tests Veterans Association (BNTVA) undertook a two week tour around Britain during January.

The main purpose for the tour was to publicise the Royal Commission and to try and uncover other nuclear veterans who would be prepared to come forward and relate their experiences to the Commission. To achieve this the organisers of the tour have attempted to gain maximum media coverage in each town.

Over thirty more veterans have come forward since the tour began. Many will be giving evidence about the time they served as guinea pigs in the South Pacific. However, many veterans feel embarrassed by their diseases or don't want to do more harm to themselves or their families by going public. Another factor may have a bearing on their reluctance to come forward:- official secrecy. The servicemen all signed the Official Secrets Act and some are afraid to break that secrecy, especially with the present political climate of prosecutions under the Act. The story of one veteran is worth knowing. The Ministry of Defence wrote a letter to his solicitor which stated that testing did not take place whilst he was on Christmas Island in 1958. Was the MoD hinting that the tests were still Official Secrets and that disclosure may invite prosecution?

The British government launched a two year statistical survey of veterans in 1983. This survey is being carried out by the National Radiological Protection Board (NRPB), the government organisation responsible for setting radiation limits in the nuclear power programme, with the help of the MoD. The survey consists of the MoD giving the NRPB the medical records of 20,000 servicemen who attended the tests and the records of 20,000 men who didn't witness the tests but who had otherwise similar service records. Considering it has been alleged that the medical records have been tampered with, don't be surprised if the results of the survey are OK.

The Ministry of Defence has refused several claims for compensation over the last decade, its reason being that 'in no case had there been any evidence of exposure to nuclear radiation significantly above...background level, or that cancer arose from other than natural causes' (*Glasgow Herald* 11.1.83). The nuclear industry, both military and civil,

has continually maintained that there is a 'threshold' level below which no effects can be demonstrated. This is despite the enormous weight of evidence to the contrary. Documents which have been uncovered by Greenpeace and the BNTVA during their investigations for the Royal Commission indicate that the MoD statements are less than accurate.

A February 1947 paper published by the Medical Research Council includes an interesting paragraph: 'All quantitative experiments show that even the smallest dose of radiation produces a genetic effect, there being no threshold dose below which no genetic effect is induced.' The following extract from a Top Secret 1953 UK Chiefs of Staff Committee Paper therefore is nothing short of scandalous. 'The Army must discover the detailed effects of various types of explosion on equipment, stores and men with and without various types of protection.' (emphasis added). However, US investigations following the Hiroshima and Nagasaki bombs 8 years previously must have provided information of the type the British tests were designed to produce, so why was it necessary to conduct the tests again? Were the Americans unwilling to release the information to their European allies? It is a disturbing fact that the nuclear powers have exposed large numbers of their own citizens to the effects of nuclear radiation (not to mention the native peoples of the Pacific Islands and Australia) in the interests of national security.

Why is SCRAM campaigning on the issue of nuclear weapons tests? Apart from the demand for a Comprehensive Test Ban Treaty and a Freedom of Information Act, the issue of low level radiation is fundamentally important to the nuclear power programme. The reason why the government does not release all the information on the tests

is crystal clear to us, and it isn't that the government will have to pay out large amounts of compensation to the veterans. Official acknowledgement that there is no threshold level for radiation will seriously jeopardise the nuclear power programme. This is not just paranoia. A paragraph in a US Department of Defense letter spells it out with great clarity:-

*'Section 3 of the Senate-passed Bill creates the unmistakable impression that exposure to low-level ionizing radiation is a significant health hazard when available scientific and medical evidence simply does not support that contention. This mistaken impression has the potential to be seriously damaging to every aspect of the Department of Defense's nuclear weapons and nuclear propulsion programs. The legislation could adversely affect our relations with our European allies, impact upon the civilian nuclear power industry, and raise questions regarding the use of radioactive substances in medical diagnosis and treatment.'* (emphasis added).

This statement may have been made by the US, but it is likely that similar views are held by the British nuclear establishment. Therefore the contention that the Windscale leak in November 1983 did not contribute to any additional health risk is clearly incorrect, and any admission that the exposure of service men in the nuclear tests has caused serious health effects will put the cat quite firmly among the pigeons as far as the government's expanding nuclear programme is concerned.

We therefore call for an immediate ban on all nuclear weapons testing, the release of all the information appertaining to the 1950's tests, and an immediate halt to the nuclear power programme.

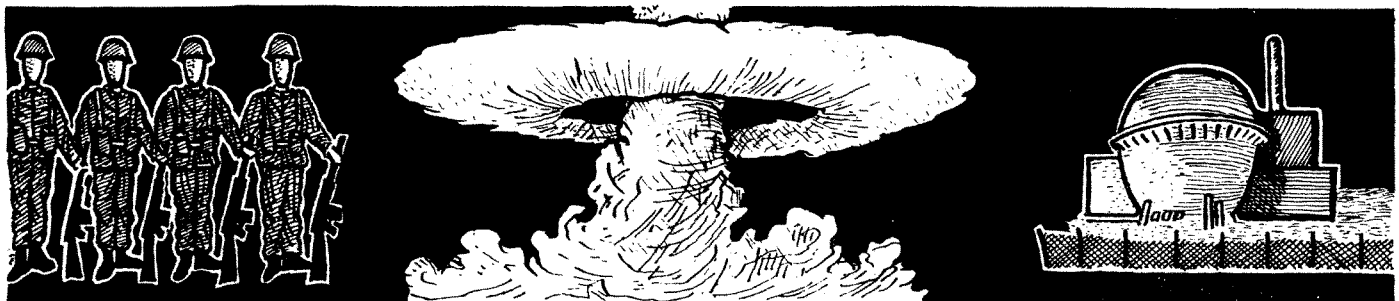
Steve Martin

## Sources

*Genetic Effects of Irradiation with Reference to Man* by the Medical Research Council, 1947

*Atomic Weapons Trials* by the Defence Research Policy Committee, Chiefs of Staff, 1953

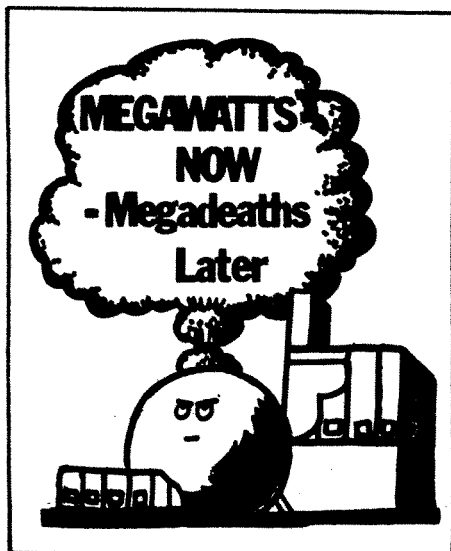
Letter from the US General Counsel of the Department of Defense to the Chairman of the Senate Committee on Veterans' Affairs, 4.9.81



American Indians have substantially lower rates of cancer than white and non-white populations, probably related to a lower prevalence of cigarette smoking. However, the incidence of death from pulmonary cancer is 14 times higher in Navajo Indian uranium miners than non miners. Death from pulmonary cancers occur in miners an average of twenty years earlier than in non miners who contract lung cancer.

An editorial in *New England Journal of Medicine* concludes that in the US 10,000 persons p.a. may die from lung cancer related to exposure to radon in the environment.

*New England Journal of Medicine* June 1984, pp1481-1484



'Danger Keep Clear Radiation' was written on the side of a Royal Navy transit van misplaced in Dumbarton. The vehicle was spotted by Councillor Les Robertson who on unforced entry, found containers also marked with radiation symbols. A complete denial was proffered by the Navy at Faslane, though the denial was transmuted into an investigation and a 'no comment' when the complainant explained that they 'had photos.' A reply from the MoD is eagerly awaited. Councillor Robertson stated, 'This does not inspire confidence in the Ministry.'

## Nuclear Transport

Viking has decided not to renew its contract for the transport of nuclear fuel. It operates passenger ferries between Stockholm and Helsinki. Viking had a 10 year contract to move uranium fuel rods to the Finnish nuclear power plant constructed by ASEA ATOM of Sweden. Viking's withdrawal completes the pull out of operators on the Stockholm/Helsinki run.

In SCRAM 45 we reported a similar commitment by Sealink Ferries.

Guardian 27.11.84

'Complete disregard for safe working practices.'

Collin Maintenance and Services Ltd admitted 20 offences under the Factories Act whilst using radioisotopes to check welding at two CEBG power stations, Eggborough and Thorpe Marsh. Medical records were not kept, radiation badges were not issued, workers were exposed to massive radiation overdoses and were often untrained. In one case a worker was exposed to 4 times the permitted annual dose when handling an X-ray

source with pliers. The firm claimed the man had not been working with radioactive material and had no medical records. Mr Park, prosecuting, said, 'During their work at the power station the short cuts the company took, their casual attitude to the dangers of radiation and their diminished regard for the regulations makes it appropriate to describe them as cowboys.'

Fine, £21,800, about £800 an offence.

Daily Telegraph 18.10.84

Daily Mail 18.10.84

## Windscale

At Windscale a worker in the reprocessing plant was exposed to twice the permitted annual level of radiation whilst carrying out routine maintenance. Exposure was spotted during a routine check. The Atomic Energy Authority described the incident as relatively minor. This is odd, as the plant is run by BNFL, not the UKAEA. Embarrassingly, the incident preceded a test of communications in to monitor/assess the performance in case of the serious leak.

Daily Telegraph 23.11.84

## BNFL

BNFL are pursuing a £150,000 advertising campaign to clean up their image. Jeffrey Preece, the Director of Information Services (propaganda), stated in BNFL News (Jan '85), 'This is a short campaign and is just a forerunner of wider-ranging advertising we have in mind as part of future public relations strategy both to promote nuclear power and also to explain the activities and achievements of BNFL itself.' Can a public company institute a political advertising campaign, and has the Government given its approval?

Con Alliday, BNFL boss, expects partial (49%) privatisation within 18 months. The problem is the company's image, Windscale/leukaemia, but it is profitable, though in the rarefied atmosphere of state owned institutions dealing with other state owned institutions, profits are not necessarily what they seem. The money men are more concerned about BNFL's liabilities, reactors to decommission and the high-level radioactive waste at Windscale. Hey presto, the CEBG and SSEB are going to pay for the decommissioning of Calder Hall and Chapelcross and it has been agreed that waste arising prior to BNFL's formation in 1971 shall be paid for by the owners - MoD, UKAEA, SSEB, CEBG.

Formal proposals for a variation of the authorisation under the Radioactive Substance Act 1960' were announced by the Department of the Environment on December 18th. The authorisation referred to is the amount of radioactivity BNFL's Windscale reprocessing plant is allowed to discharge into the Irish Sea.

The discharge of alpha emitters is to be reduced to 200 curies when the new pollution control plant comes on stream this year at a cost of £30m. The construction of a 'major new treatment plant', the floc precipitation plant, is expected to reduce the discharges to 20 curies of alpha emitters (including plutonium) after 1991, at a cost of a further £150m.

The Paris Commission called for reprocessing plants to take account of the best available technology to minimise radioactive discharges to the marine environment. A pamphlet from Doove-Holbein and John Brown Engineering, sent to Greenpeace, claims that current control technology will reduce discharges to zero more quickly than the six years the DoE has chosen as its target for a reduction which will still leave Windscale top of the pollution league. It is understood that the Government is fully aware of this technology yet has chosen to ignore it.

Greenpeace has written to William Waldegrave MP at the DoE, pointing out their concern over the new discharge levels. They point out that dry storage of spent nuclear fuel is readily available and that it would bring about 80-90% reduction of discharges within two years, and that the Government should order installation of technology to reduce discharges to zero.



In the land of the hand gun you don't look gift horses in the mouth you shoot the pinko commie hand out merchants; a US admiral had bomb disposal experts blow up an Xmas gift, 2 bottles of vodka from a Soviet counterpart, because it might have been a bomb. 'It's the thin edge of peace process, if we don't stop them now we'll be up to our paunches in freebies.' We all know there's no such thing as a free lunch, but free drinks?



An errant Cruise missile and an inopportune Pershing engine ignition are not the only nuclear weapons development since our last issue.

At the talks about talks the combatants agreed to talk on, but words are cheap. America is about to breach SALT II, the deployment of Trident I subs will take missile totals above SALT limits unless older subs are scrapped.

In Machrihanish on the Scottish coast American Commandos are believed to be equipped with small nuclear demolition charges, small in the sense that they are readily moved.

The US government's Lawrence Livermore labs have developed and tested a lightweight low yield atomic bomb that could find employ as part of an anti-satellite weapon.

General Rogers, the Supreme Allied Commander Europe, but nonetheless an American, announced that a 2nd flight, 16 missiles, of Cruise missiles, is at Greenham. Canada is nuclear free!

This month the government denied a *New Statesman* suggestion that they planned to produce chemical weapons. However, back in the fifties the use of radioactive waste against an enemy was contemplated and Harwell was asked to suggest the appropriate weapons.

Bombs containing 1000 Ci would weigh 1350kg and 'if one plane could carry 3 such "bombs", 3 sorties a day over the 2 square kilometers would effect the contamination under consideration.'

Phosphorous-32, chromium-151 and cerium-141 were considered the best tactical isotopes. Bombers would require thick metal shields to enable crews to survive while making several flights a day.

New Scientist 17.1.85

SCRAM Journal February '85/March '85

The plans for dumping intermediate level nuclear waste at Billingham in Cleveland have been abandoned. This just goes to show that public pressure can have an effect. The announcement was greeted with jubilation by the anti-dumping groups throughout the country. Chris Church of Friends of the Earth described the decision as a 'vindication of many months of hard work' by the local group Billingham Against Nuclear Dumping.

However, the site for 'low level' waste is still Elstow, near Bedford, and with the publication of the Holliday Report (see below) recommending a continuation of the sea dumping ban, it seems likely that there is still a long fight ahead for the other BAND. Nevertheless, the Bedfordshire County Council is fully behind the anti-dumping campaign, has passed anti-dumping and anti-waste transport resolutions, and is helping to finance FoE's campaign in the area.

But we must not be complacent. If Billingham is out, then where else is NIREX looking? A desk-top survey of 100 sites is supposed to have been made before Billingham and Elstow were chosen as the most suitable; if Billingham is no longer suitable then the next site announced must be less suitable (in the eyes of Nirex).

Apparently NIREX now has a short list of six further sites which they are examining, one of which is Stormy Bank, 15 miles west of the Orkney island of Hoy. The proposal, put forward by Ensec, is to dump waste 300 feet under the sea bed. This scheme has already received a lot of stick, not least from Clifford Blumfield, director of the Dounreay Fast Breeder, who doesn't see it as a very good idea.

We demand that NIREX now publishes the short list for the public to examine before any public inquiry is called. We don't want to be kept in the dark any longer.

## Radwaste

In December last year the long-awaited Holliday report was published. This was the committee set up by the Department of the Environment in March to review the sea dumping of nuclear waste. It included Trades Unionists, and was chaired by Professor Fred Holliday of Durham University.

The Committee was set up on the grounds that, if a national report which had the backing of the TUC found no reason for dumping to cease, it would remove trade union opposition to dumping. Unfortunately, things don't always work out as expected. The report recommended a continued ban, at least until the London Dumping Convention (LDC) had resolved the scientific controversy, and called for much greater research (a tactic often used by the gov-

ernment.)

The next LDC meeting is in London in September and will probably be the most important ever with respect to radwaste dumping, when the delegates will consider the report. There are likely to be moves either to amend the annexes to ban dumping altogether or to extend the suspension of dumping in one form or another.

The Navy's hunter killer refit facility at Chattam is to be cleaned up and dismantled by Nuclear Waste Technologies. The £600,000 contract requires the removal of nuclear contamination attending the twenty year operation of the nuclear submarine.

Financial Times 28.11.84

## Demos/Peace Camps

The Naval Air Station at Alameda USA now has a women's peace camp. On Nagasaki day a group of women strolled into the base, straying into the 'Alpha Zone', the ultra-high security area. For four hours they passed out leaflets to everyone they encountered. It was not until fifteen minutes after the women had left an area posted 'Use of Deadly Force Beyond This Point Authorized' that base security arrived.

The camp has been repeatedly harassed - rape threats from sailors, the beating up of a group of young boys by sailors when they came to the campers' assistance, police indifference, payment to local kids to stone the camp. Undaunted they continue to follow their vision of women working together for justice and living together communally. It's About Times, Abalone Alliance Newspaper, Nov/Dec 1984



Faslane peacecampers today, 24.1.84, stopped the nuclear weapons convoy which passes their door. Whilst two sat in the road, a third climbed onto a vehicle roof. All three were arrested.

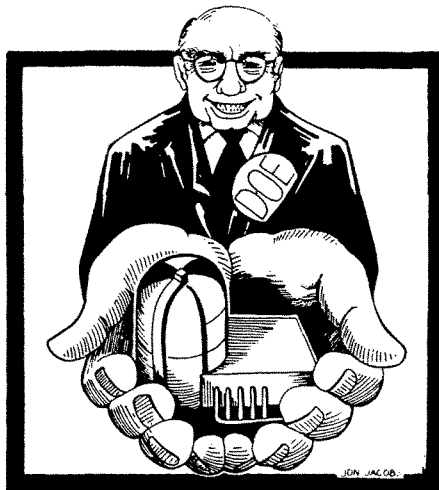
After a decade of debate the Dutch government has decided to go ahead with the construction of two nuclear power stations with a combined capacity of 2500 MW to satisfy the projected energy shortage for the year 2000.

Hundreds of anti-nuclear demonstrators gathered at Borsele, the country's only nuclear power station, to protest about the decision at the weekend.

Government Environment and Economics Ministers have claimed that nuclear power will be cheaper than fossil fuels and that the problems of safety, security, waste disposal and siting are all manageable.

Scotsman 14.1.85

Financial Times 14.1.85



"YOUR IN OUR GOOD HANDS WITH NUCLEAR POWER AND THAT'S EXACTLY WHERE WE WANT YOU"

In New Brunswick, Canada, Maritime Nuclear, a crown corporation, plans to build Lepreau II, a 600MW Candu. No domestic market exists for Lepreau II and no export market exists for Lepreau I, let alone its little brother.

Nuclear Free Press. Winter 84/85

Syria hopes to join the nuclear club by 1991, after a (un) successful negotiation to buy a 440MW reactor from the Soviet Union. Nuclear technology appears to have eluded Syria after several attempts to buy from the West failed.

Financial Times

## Fuel Cycle

The 1983/4 material inventory reveals the loss of 2kg of Pu from Dounreay and the apparent gain of 859Kg of low enriched uranium, discovered in residues from early AGR fuel charges. Was its loss noted? The authorities suggest that Pu losses are statistical, that is measurement errors, but strangely 'gains' are of smaller magnitude: 0.2Kg at Harwell, losses of 2.0, 0.3 and 0.2 Kg.

Atom Dec. 1984

URENCO, the Anglo-German-Dutch uranium enrichment consortium, has won contracts worth £450 million. The fuel rods will serve reactors in Sweden, the States and West Germany. BNFL, a partner in URENCO, will accordingly expand its Capenhurst enrichment plant.

Financial Times 8.1.85.

The President of Hydro Quebec, asked why Hydro had decided to operate its new nuclear reactor (Gentilly-2) at a time when there is such a vast surplus of electricity said, 'There isn't any really good reason except that the reactor cost a billion and a half to build and it is hard to forget a billion and a half dollars...If we don't run the reactor it will corrode.'

The plant had to be shut down for several weeks because one of the operators got sick. 'It's not as silly as it sounds,' he said. 'We only have five qualified operators, and we cannot operate with fewer than five. We can't borrow any operators from Ontario or from the States because they can't speak French - and nobody wants to train to become a nuclear operator because we won't be building any more reactors. So, when one of the operators gets sick, we have to shut the plant down.'

Fission Chips June 1984 984

## Torness

Since the initial inquiry in 1974 there have been three more inquiries - two into the proposed pylon routes and the most recent into the proposed railhead facility from the transportation of spent fuel to Windscale. The 1974 inquiry gave no indication that further applications would be lodged for either the pylons or the railhead. The present dispute is over an application to open four more quarries in the area to provide extra gravel and hard core for the access roads during the construction of the transmission lines.

Councillor Alistair Hewatt of the Borders Regional Council has described the SSEB's conduct as 'disgraceful' and has claimed that, had they had this information at the previous inquiries, it would have considerably strengthened their case.

## Industry

An old-fashioned, inefficient, and strife-torn industry is being replaced by a modern, clean, cost-effective, trouble-free one, could be the government's image of the coal strike and its aftermath, but this fails to fit the American experience.

The United States undertook an enormous investment in nuclear power in the last twenty years, but now finds itself faced with massive construction cost overruns and the plants that are completed and on stream have been beset by one problem after another. David Freeman, former managing director of the Tennessee Valley Authority (TVA), the largest utility company in the free market system and an acknowledged neutralist on the nuclear issue, says: 'the existing technology is not just good enough, it is time to confess that we went too far in deploying large scale designs of a reactor type we know too little about.'

A July 1984 internal TVA report concluded that the capital costs of a coal-fired plant (including its required pollution control equipment) are 60-70% of an equivalent capacity nuclear plant. At the same time the report concluded that the anticipated 1990 operating costs of a coal plant would also be less than that for an equivalent nuclear plant.

On the basis of the report the TVA on 29th August 1984 terminated construction of four nuclear power plants at a loss of \$2.7 billion in sunk costs. Three of the plants were more than one third complete. These were the most recent of a series of cancellations of American reactors under construction in the past 10 years. In July two Midland Michigan reactors were cancelled although 85% complete after 17 years of construction work.

Unlike the state-controlled, state-financed European nuclear industry, the

United States publicly-owned utility companies are faced with the not unreasonable task of making 'real' profits,

Could it be that the economic disaster that is the United States nuclear industry persuaded Sir Frank Layfield, the Sizewell Inquiry Inspector, not to consult US experience but instead to visit the state-controlled and state-financed nuclear power industry in France?

From its beginnings in exploiting South African and American Indian uranium miners to its end in producing plutonium, nuclear power has been a dream that has failed. Control of energy - the primary source of our wealth - will pass into the hands of an elite of technocrats outside the jurisdiction of any local authority, accountable only to their own self-interest and the military industrial interests of the State.

Pat Gribbin

SCRAM Journal February '85/March '85

A major energy forecasting study has been comprehensively debunked. The study, *Energy in a Finite World*, predicted that fast breeder reactors (FBR's) would inevitably contribute 25% of energy used worldwide in 2030, requiring an additional 1000 nuclear MW every 4-6 days for the next 50 years.

Published in 1981 by the International Institute for Applied Systems Analysis (IIASA), an East/West research organisation based in Austria, it involved 225 person years of work and \$6½m.

The gargantuan study's aim is 'to understand the factual basis of the energy problem, that is, to identify the facts and conditions for any energy policy' and 'provide decision and policy makers with the information they need to make strategic choices.' A dramatic increase in



energy consumption over fifty years was predicted, requiring expansion in all energy supplies - fossil, synfuels, nuclear. In both the high and low growth scenarios nuclear energy contributed about ¼ of all energy. Today in the UK nuclear stations generate only 4%. Dr Hafele, the team leader, felt the conclusions were 'globally comprehensive and allow for no escape.'

IIASA's work was well received. Sir Herman Bondi, Chief Scientist at the Department of Energy until 1980, maintains that his department 'thought highly of the study.' The study confirmed and supported the positions of the nuclear propagandists and as with most good news, the bearers were not scrutinized too carefully. However, two former IIASA research scholars reworked the computer models and appraised the assumptions employed, writing in *Nature*: 'in many cases the models essentially reproduce informally prescribed input projections that pass through the model unchanged.' Having constructed a computer model, information is entered, and in a good model the conclusions are not highly dependent on the inputs. In a model predicting the cost of a family holiday the price of ice cream is a factor, but unlikely to be critical. In a robust model, the predictions should not alter dramatically when small alterations are made to inputs.

This was not the case with the IIASA study. Electricity generation costs were assumed to remain steady in real terms, FBR's to become available in 2000, and uranium prices to rise by 7% in 2005 as cheap uranium sources were depleted. This gave the initially more expensive FBR a 2.1% edge over LWR's and led to the latter being phased out. In other scenarios only the date for the step rise in uranium prices was altered, producing the same conclusion, but with a different timescale. The two critics, Keepin and Wynne, using the IIASA model, show that if coal became a little cheaper nuclear power disappears. (See graphs.) That the model was unstable was recognised early in the study, but later reports omitted this important qualification. This instability is compounded by the arbitrary selection of critical inputs, that is, inputs determining the study's

conclusions were not generated rigorously, but were guesstimates. In addition, no consideration of the macroeconomic effects of the predicted energy consumption and the associated reactor building programme was made. This would have involved the economic and structural effect of building one large reactor every 4-6 days. Finally, options for reducing energy demand were largely ignored in favour of capital intensive supply technology.

The two authors write of their investigation that it 'brings conclusions drawn from several scenarios into question. They also raise more general issues relating to the professional standards, peer review in non experimental science, and the proper role of science in formulating public policy.' They add scathingly, 'rather than attempting to identify objective policy truths, perhaps a more realistic role for policy modelling is to explore origins and consequences of different social and institutional assumptions.'

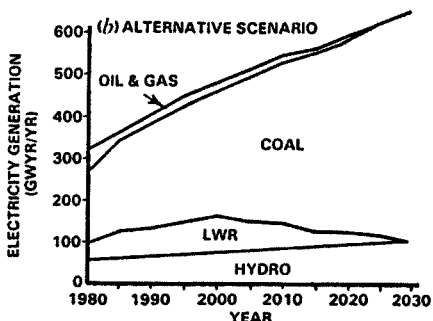
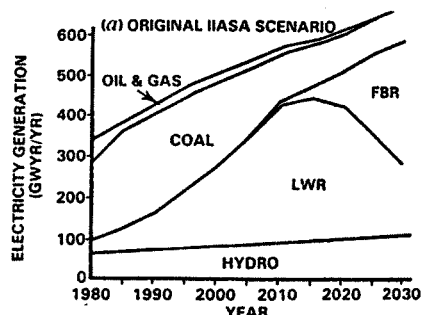
As for the IIASA project leader Dr Hafele, it transpires, is a former head of the German FBR programme, and the author of a 1964 report predicting huge cost savings with FBR's. In 1981 this earlier study was found to be based largely on guess work. Nonetheless, Sir Hermann Bondi, ex DoE, still considers the study 'the best piece of work done by IIASA.'

The UK has spent £2.46 billion (1982 prices) on FBR's and is spending £100m a year.

Jeremy Adler

#### Sources

*Technical Analysis of IIASA Energy Services.* *Nature* Dec 1984 312 691-5  
*New Scientist* pp1435/6 Dec 1984  
*Guardian* 29.11.84



Sensitivity to IIASA cost assumptions in United States and Canada, demonstrating structural instability in IIASA scenarios (which invalidates "robust conclusions" drawn from them). a, Original IIASA projection for electricity generation. b, Alternative projection, assuming 16 per cent increase in nuclear costs (and moderate increase in assumed coal extraction constraint after 2025).

## Nuclear Links

Atomic Energy of Canada Ltd (AECL) is desperate to sell Korea (South) a second CANDU. The first was sold in 1976. Their desperation extends to offering to hand over the blueprints, a commercially risky move as it would allow the Koreans to export CANDU's. It is only plausible if AECL can envisage no future

for CANDU.

Korean nuclear scientists have been in Canada working with AECL on plutonium recycling and fuel fabrication. As demonstrated by India, it is very easy to divert Pu from CANDU's. Korea is being helped with two of the three critical ingredients for a clandestine power

programme. The third is a competent designer.

The Taiwanese military are also interested, perhaps noting the Indian route to atomic bombs, but Canada must restore diplomatic relations with Taiwan without offending China.

Nuclear Free Press Winter 84/85



# NPT ~ No Peace Tomorrow

In the second part of our series on the Non-Proliferation Treaty in preparation for its 3rd Review Conference in September Jos Gallacher examines the superpower failure to deliver on the disarmament clause.

Article VI of the Non-Proliferation Treaty obliges signatories to 'pursue negotiations in good faith' on three subjects:

- 1)'...effective measures relating to cessation of the arms race at an early date...'
- 2)'...nuclear disarmament...'
- 3)'...a treaty on general and complete disarmament under strict and effective international control.'

In addition the Treaty's Preamble recalls the commitment in the Partial Test Ban Treaty to continue negotiations to ban 'all test explosions of nuclear weapons for all time.'

Fifteen years after these obligations gained the force of international law, a Treaty on general and complete disarmament remains a pipe-dream, the comprehensive test ban has yet to be completed, nuclear disarmament is the elusive goal of sporadic negotiations, and 'measures relating to cessation of the nuclear arms race' are never 'effective'.

At the Review Conferences in 1975 and 1980 the superpowers could claim that the Strategic Arms Limitation Talks (SALT) represented an attempt to halt the arms race. Indeed the SALT I 'Interim agreement' and the SALT II treaty did impose limits on the most significant category of nuclear weapons. However, as Table 1 shows, the number of weapons in the controlled category continue to grow.

The interim agreement ran from 1972 to 1977 and froze the number of Inter-continental Ballistic Missiles (ICBM) and set limits on the number of Submarine Launched Ballistic Missiles (SLBM). The agreement did not control the numbers of bombers and, more significantly, did not limit the number of warheads on missiles. The United States evaded the limits by deploying MIRVs - the technology which allows a single missile to direct nuclear weapons at several different targets. The Soviet Union followed suit some years later, but in 1972 the Russian build up was able to continue as the SLBM limit was set above the existing

Soviet figure.

The SALT II Treaty equally failed to stop the increase in numbers of strategic nuclear weapons, despite the fact that limits were now extended to cover MIRVs and bombers. The US has evaded the limits by increasing the number of nuclear weapons carried on each bomber, mainly by fitting them with cruise missiles. One B52 which carries 4 bombs can be modified to launch up to 20 cruise missiles. The Soviet Union has continued to MIRV its missiles. Although the Treaty has not been ratified both sides promised to observe its limits. Nevertheless the Soviet Union began with 250 ICBMs above the limit and has not reduced that number.

As well as the increase in warhead numbers, the arms race has continued in other directions mainly in improving the quality of weapons. Missiles have become more accurate and in some cases the warheads they carry have greater destructive capacity. The modernisation of nuclear weapons in Europe is another aspect of the arms race spurred on by the desire to evade arms control limits.

Given the inadequacy of these agreements, it is hardly surprising that the non-aligned countries complained in 1975 and 1980 that the superpowers had not fulfilled their obligations under Article VI. At the earlier Review Conferences the superpowers could point to their signatures on the treaties as evidence that they were negotiating in good faith. That defence will not be available in 1985. The superpowers 'good faith' will be judged on their record of their failed talks on INF and START.

Each side blames the other for the failure to reach agreement. Each has denied that the other was negotiating seriously. The Soviet Union points out that the American START proposals would have cut the main part of the Russian strategic forces while legitimising all America's planned new weaponry - MX, Trident D5 and air-launched cruise



PETER KENWARD

missiles. At the INF talks the United States stuck rigidly to its original 'zero option' proposal from the time the talks opened in November 1981 until in January 1983 President Reagan announced his willingness to consider an 'interim solution.' The US complains that the Soviets abandoned the INF talks in November 1983 when the US was prepared to continue negotiations, and that the Russians refused to continue the START talks in 1984 despite the progress that had been made.

At past review conferences the NWS have joined forces to resist pressure from non-aligned states for more action on Article VI. In 1985 there is a danger that if each side can only justify itself by accusations of bad faith on the part of the other, the conference will degenerate into an East-West squabble that would seriously undermine NNWS support for the NPT.

Later in this series I will propose practical arms control steps consistent with the obligations of the NPT which could lead to disarmament. However, there are three nuclear weapons states with obligations under the NPT. Next issue will examine how Britain has reacted to its responsibilities under Article VI.

Jos Gallacher

Year	Independently Targeted Strategic Warheads		Events in Arms Control	Year	Independently Targeted Strategic Warheads		Events in Arms Control
	US	USSR			US	USSR	
1968	4,200	1,100	NPT Signed	1977	8,500	4,000	SALT 1 expires
1969	4,200	1,350		1978	9,000	4,500	
1970	4,000	1,800	NPT in force	1979	9,200	5,000	
1971	4,600	2,100		1980	9,200	6,000	2nd NPT Review Conference
1972	5,700	2,500	SALT 1 in force	1981	9,000	7,000	
1973	6,784	2,200		1982	9,000	7,000	
1974	7,650	2,500		1982	9,681	8,000	
1975	8,500	2,500	1st NPT Review Conference	1983	9,665	8,000	
1976	8,400	3,300		Source:- Sipri Yearbooks 1976; 1982; 1983; 1984			



# Japan's Nuclear Expansion

Japan is the third ranking industrial power in the world and, because of a lack of oil and coal, has the second most ambitious nuclear programme (after France). Despite the collapse of the giant US nuclear programme Japan is pressing ahead, with views to offering a complete nuclear fuel cycle to countries such as South Korea, Taiwan and China.

There are presently 28 nuclear reactors operating in Japan providing some 14% of the electricity generating capacity of 100,000MW, with hydro contributing 17% and the rest coming from expensive imported oil: hence the expanding nuclear programme. However, Japan is not only building reactors; the whole chain is being developed from uranium prospecting through enrichment and fuel fabrication to reprocessing and waste treatment. But if the Power Reactors and Nuclear Fuel Corporation (PNC) is determined to establish a complete cycle, then there are some problems to resolve first.

The following is a summary of Japan's involvement in the various states of the fuel chain:-

## Uranium Prospecting

Canada: Dawn Lake, Powder River, Princess Mary and Thekulthili Lake Projects, either as joint ventures or single projects.

Australia: near Townsville, Queensland (probably in the same area that the French Minatome Company have their mine, at Ben Lomond); Tarcoola, South Australia; Mulga Rock (Officer Basin) and Turee Creek in Western Australia. 20 tons of uranium ore have already been sent to Japan from Mulga Rock for analysis in 1983.

Africa: Mali, Niger and Zambia.

China: An agreement to prospect is underway.

## Enrichment

A pilot plant of 7,000 centrifuges has been operating since March 1982 at Ningyo Toge (Okayama Prefecture). So far, more than 20 tons of enriched uranium have been produced.

A new system to produce reactor grade  $UF_4$  directly from the crushed ore (not Yellowcake) has been used. This 'Wet Process' can also make  $UF_6$ . Until the commercial plant, now under construction, is finished, most of the  $UF_6$  is imported from the USA and France.

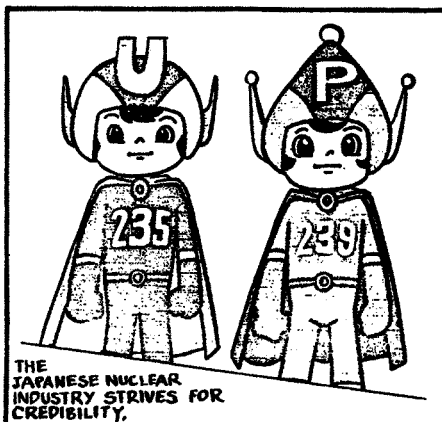
## Fuel Rod Fabrication:

Most of the oxide fuel for Japan's Light Water Reactors (LWR) has been made in the US, as Japan is unable to produce zirconium cladding. However, effort is being concentrated on producing mixed oxide fuel (MOX) for use in the JOYO experimental Fast Breeder Reactor

(FBR) and FUGEN, the Heavy Water Moderated Advanced Thermal Reactor (ATR). The MOX fabrication plant is fully automated and is designed to produce 5 tonnes of high grade and 40 tonnes of low grade plutonium per year by 1987. A prototype plant at Tokai, north east of Tokyo, has so far produced 70 tonnes of MOX since 1972.

## Power Reactors

There are 26 LWR's, one Magnox reactor (supplied by the UK) and one ATR (the JOYO 100MW FBR does not produce electricity and has had problems with



heat transfer and the sodium coolant.) Developed with lots of government money, the FBR and ATR projects are expanding with the MONJU 280MW FBR under construction. The US Department of Energy is showing 'great interest' in the MONJU project. Four more LWR's are due on stream this year and, as usual, they will probably be on schedule. The steel pressure vessels are built by Mitsubishi and the Nihon Steel Company and Hitachi and Toshiba are heavily involved in the nuclear industry. The JAERI research institute is currently developing a helium-cooled high temperature reactor designed to operate at 950°C with the aim of interesting heavy industry and the chemical companies. Although the US and West Germany are very co-operative, Japanese industry seems to be unimpressed.

Japan is assisting Westinghouse, Bechtel and Framatome to expand the South Korean nuclear programme. There are presently three PWR's in operation with a further 6 Westinghouse designs under construction. It is not known to what extent Japan is involved in the North Korean programme.

## Reprocessing

Of the 485 tonnes of spent fuel produced each year in Japan, the Magnox is sent to Windscale and the rest to La Hague in France. It is now unlikely that France will be able to meet the increased demand, so interest is now directed

towards the long-awaited THORP plant at Windscale. A PNC official I spoke to was very concerned when he heard that THORP is at least 10 years away yet. Much of Japan's spent fuel will have to sit in cooling ponds at the reactor sites until such time as reprocessing facilities become available.

There is a reprocessing plant at the huge Tokai works which was built with the assistance of Saint Gobain Techniques Nouvelles of France, but there have been problems. The original nitric acid dissolver failed in January 1983 because of the highly corrosive nature of boiling acid. Up to that point, since 1981, some 174 tonnes of uranium and one tonne of plutonium had been reprocessed. Much of this has been used in the MOX fabrication and in JOYO, but the rest is unaccounted for. It is known that the Government is trying to change the three non-nuclear principles of the post-war Japanese Constitution and that many agreements have been signed with the US, the most recent being on 'Criticality Data Development' information (essential for nuclear bomb manufacture), so this may give some indication about the destination of some of the reprocessed material.

## Waste Treatment

Low activity waste (clothes, liquids and gases) are dumped into the environment, and all high activity liquids are stored in steel lined concrete tanks similar to those at Windscale. In August 1984 Japan, Australia and the UK signed an agreement to develop the Australian 'synroc' vitrification system to deal with the high activity wastes but the full-scale factory is still a long way off. The nuclear industry claims that there is no sea dumping unless you define the Windscale-type pipelines as sea dumping because Tokai and the reactors all discharge into the sea.

## Alternatives

There are two small geothermal power stations on the main island of Honshu, but the only solar power station, on the island of Shikoku, closed recently despite Japan being a world leader in photovoltaic cell development. Conservation is almost a non-issue and there are no wind or wave power projects. The trend is to imitate all the worst aspects of the West - wastage, non-recycling, too much lighting and air-conditioning.

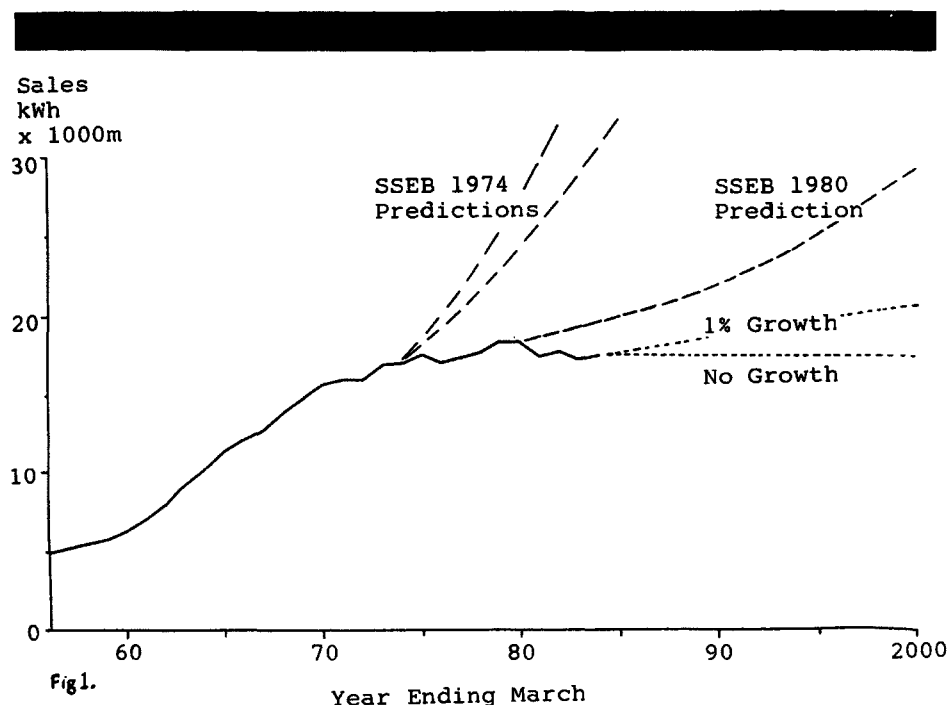
To conclude, Japan is determined to complete the fuel cycle by 1990 and to offer complete systems to China, Korea, and other developing Asian countries. Only time will tell whether their dream of fast reactors and Advanced Thermal Reactors will become a reality. At present, the only certainty is expansion.

Christophu Williams  
(World Bike Ride)

# This Failed Dream

If the Torness AGR comes on stream nuclear power could account for 80% of the SSEB's power output and the production of coal for electricity generation could drop from 8 million tonnes (1980) to around 2 million tonnes in 1990, crippling the Scottish mining industry. This is despite assurances given by Mr Miller on behalf of the SSEB to the House of Commons Select Committee on Energy in May 1980 that 'we have planned, taking account of Torness, that our coal burn through to the end of the century will remain about constant at around 8 million tonnes.'

The SSEB's predictions about electricity demand have been consistently wrong, always favouring high growth. Growth from 1974 was expected to be at a rate of 8.2% p.a., with sales reaching 30,000 million units in 1981. In 1983/4 sales were only 17,770mu, almost exactly those recorded in 1975. In 1980 a submission to the House of Commons Select Committee on Energy predicted an average annual growth rate of 2½% until the end of the century. By 1984 it had dropped by 3% over four years.



Matching generating capacity to demand is a prerequisite of efficient management. Failure results in either power shortages or excess plant which represents wasted resources. The construction of a new plant takes about ten years, requiring forecasts covering a longer period.

Figure I shows sales by the SSEB to consumers in the South of Scotland area over the last twenty five years. Growth was very rapid between 1960 and 1965, with an annual rate of 12%. This dropped in the second half of the decade to 6.8% p.a. Over the first half of the 70's, growth dropped to 2.2% p.a., and 0.75% between 1975-1980. Sales peaked in 1979 and have subsequently declined at a rate of -0.8% p.a.

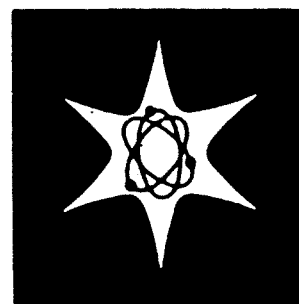
In 1974 the SSEB's annual report predicted a rise in sales to 30,000mu p.a. by 1981, representing an annual growth of 8.2%. At the Torness Public Inquiry 6% was offered. Figure I displays these predictions. If two rates had applied until

the end of the century, a demand would be between 134,000mu p.a. and 79,000 mu p.a., seven or four times that for 1984. Both 1974 predictions were grossly inaccurate and absurd. The boom in consumption in the sixties reflected both a real increase in energy use and, more importantly, a switch away from solid fuel in favour of electricity by industrial and domestic users. The SSEB failed to appreciate that a switch between energy sources does not result in sustained growth in the favoured source. The SSEB's 1972/3 annual report indicates that staff were aware that the rise in electricity in the sixties and early seventies was at the expense of coal burning by the consumer. A graph on page 18 shows alteration in coal use.

The SSEB's next public predictions came in 1980. Unchastened by an annual growth of only 1.0% since their earlier prediction (8.2% or 6%) two claims were advanced:- 'a pattern of low growth for the next few years, but building up to-

wards the end of the century to give an average growth of over the next twenty years of about 2½% p.a.' Consumption by the year 2000 would therefore be 29,000mu. Five months later the SSEB, in a memorandum to the House Committee, included 'growth in demand of 1½% p.a. over the medium term, rising to 2.4% for the period to the end of the century.'

In 1980 absence of the expected growth changed the SSEB's rationale from Torness 'some years before it is expected to be required to meet load growth. This [Torness] will avoid peaks in the Board's coal and oil demand in the early 1990's' and 'by building Torness early (on stream in 1986/7 rather than 1992/3) we will get a discounted cash flow advantage of something like £400m.' For the future Mr Miller observed, 'We do not see a need to order another plant until about the mid 80's.' However Torness would not reduce the SSEB's coal burn '8 million tonnes (p.a.) or thereabouts rising towards the end of

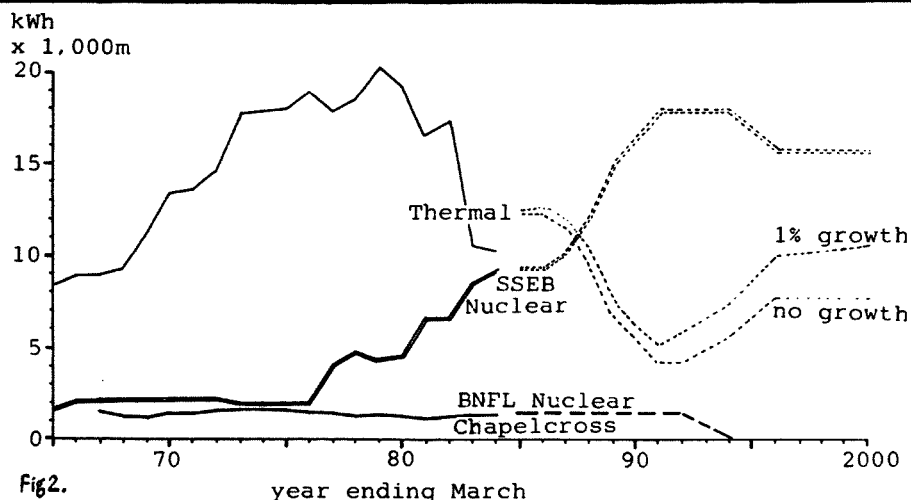


the century.' In 1979/80 coal burn had been 8m tonnes and Mr Miller was guaranteeing the maintenance of this level of use for the next 20 years with the proviso 'that [Peterhead] will depress coal demand by perhaps as much as one million tonnes.' Peterhead burnt gas from the North Sea until the chemical plant at Moss Moran was complete. In early 1985 the run down of Peterhead was announced. Figure II shows electricity sent out by the SSEB from thermal and nuclear plant. The extension to the end of the century assumes that Hunterston A and Chapelcross are decommissioned in the 1990's, that Torness operates well, with a load factor of 70% matching the SSEB's claims of 78% for the similar AGR at Hunterston, and that the installed capacity, 1320 MW, is available capacity is only 1020MW. A major assumption is that apart from replacing the output of Peterhead, the SSEB do not substantially increase electricity exports. Substantial exports from Tor-

ness would conflict with a statement in 1980 by the SSEB that 'we see it supplying electricity to Scotland.' It appears that the successful commissioning of Torness will reduce thermally generated electricity from 20,000mu in 1979 to about 4,000 mu in 1990, rising to 8,000 mu at the end of the century as older nuclear plant is eliminated.

In Figure III thermal electricity generation is separated into coal and oil and projections made until the end of the century. Assumptions include stable hydro capacity, no oil burn and minimal power exports. Three rates of growth are portrayed, 2½% from 1980 p.a. overall until the end of the century (SSEB 1980 prediction), and annual growth rates of 1% and no growth. In addition part of the SSEB's submission to the House of Commons Energy Committee shows projected coal and oil burn assuming the early, 1986/7 opening of Torness B. The remaining trace, 'no growth oil use', combines the SSEB projected oil burn with the no growth scenario. This is highly unlikely but shows that coal burn could be reduced to as little as 1m tonne p.a.

In no scenario does coal burn consistently remain above 8m tons, the SSEB's 1980 commitment, not even in their submission to the House of Commons. Torness reduces coal use by 3½m tonnes p.a. The board's other AGR had a similar effect in the late seventies and early eighties once it began to operate properly. The recession and low capital investment suggest that economic growth will be low for the remainder of the century, in Europe energy growth is about half the rate of economic growth and combined with an increased appreciation of efficient energy use, the growth in



electricity consumption is likely to be between 0-1% p.a.

In 1980 the SSEB took about two thirds of Scotland's coal, 8m tonnes. A reduction in coal burn to 2m tonnes in 1990 represents a halving of the coal industry north of the border with widespread job losses. In addition the Board is believed to be intending to reduce its reliance on Scottish coal from over 90% to around 80%, again damaging the coal industry. It is continually mooted that the electricity industry in Northern Ireland will switch from oil to coal which could come from Ayr, but this would be from open cast mines.

The predictions made by the SSEB have favoured high growth which has not materialised. New plant has, however, been constructed at great expense and an overcapacity of 130% is expected

when Torness is commissioned. Despite massive corporate failure the culprits still retain lucrative jobs whilst the miners, an innocent party, face redundancy and the destruction of their industry. Is this accidental? or do continual predictions of high and increasing rates of consumption used as the rationale for a huge nuclear programme have a more sinister connotation, perhaps 'removing a substantial proportion of electricity production from the dangers of disruption by industrial action by coal miners.'

Jeremy Adler

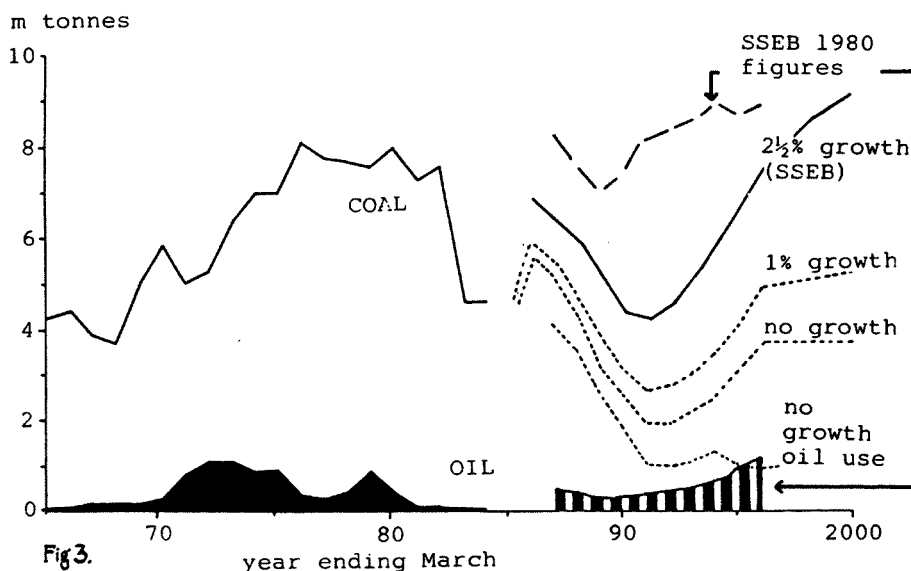
\*Cabinet minutes, Oct.1979

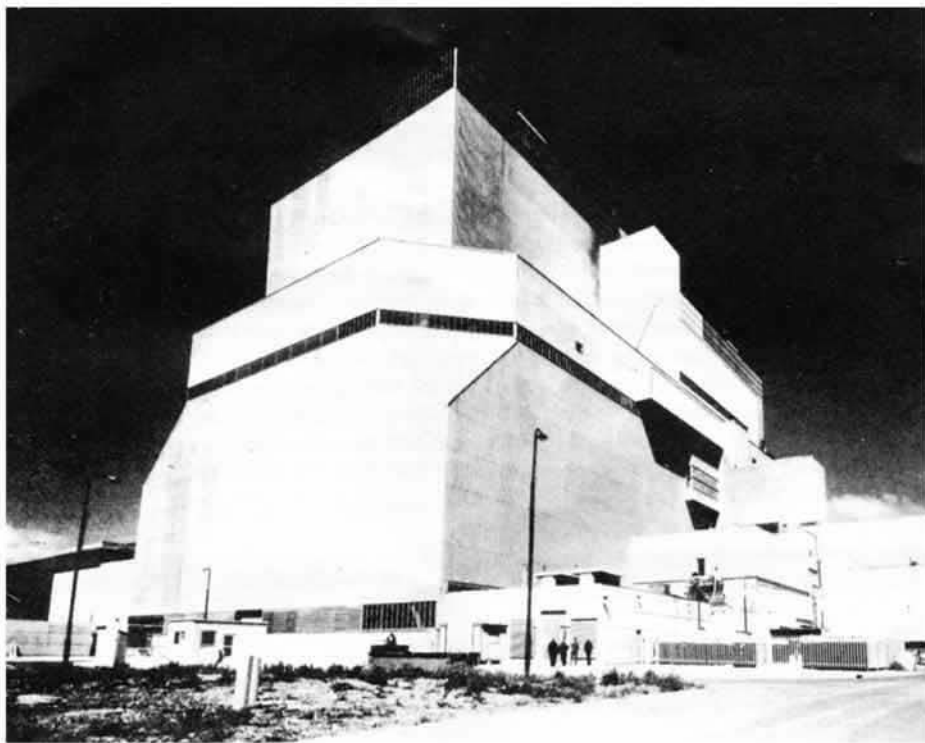
#### Sources

SSEB Annual reports. Date refers to year ending in March  
House of Common Select Committee on Energy 1980/81

The SSEB has made two important financial moves, the raising of £200m in US markets and an attempt to sell Torness and lease it back. The latter move is commonly employed by photocopier salesmen and takes advantage of oddities in the tax system. The Treasury would not permit the SSEB's gambit. Raising money in the States is expensive and risky. The recent plummet of the pound will add to the repayments.

The SSEB and the North of Scotland Hydro Board will face the Monopolies and Mergers Committee this year, as part of a rolling series of inquiries into the public sector industries.





What risk?—Hinkley Point B, a modern nuclear station

## All Gone Rong

Dungeness B, the first full scale AGR, was such a thorough disaster that it had to be repeated, and Hinkley Point was chosen as the site. As Professor Duncan Burn put it in his magnificent *Political Economy of the Nuclear Age*: 'Authorities and boards become vested interests, eager for more power, for larger staffs, larger empires, anxious to conceal or explain away what goes wrong. The public property becomes a private interest.' It was in the private interest to behave as though Dungeness was a world beater.

There was no Public Inquiry on the siting of Hinkley B. In 1957, the Inquiry for the A station revealed that if all went well there would probably be an additional 500 MW on the site. By the time the B station was under way, this became an additional 1320 MW giving the site 164% capacity above that approved by the Public Inquiry. At the same time the Central Energy Authority (CEA, the CEB's predecessor) denied interest in a third station; the CEB has since promised a PWR for Hinkley C, as soon as it's proved to be as much a success at Sizewell as the first AGR was at Dungeness. The CEA representative at the 1957 Inquiry was later rewarded with a seat on the CEB's board and an OBE.

The CEB wanted to place the order for Hinkley B in 1966, but the contractors on Dungeness couldn't put up a plasterboard partition, let alone build another nuke, so the job went to the Nuclear Power Group (NPG), apparently without competitive tendering and below the Dungeness price per MW. Tam Dalyell MP, on the House of Commons Select Committee for Science and Tech-

nology, complained that this was an example of Buggins' turn.

AGR's reliably generate cost overruns. At constant prices (March 1982), construction costs plus interest during construction as a ratio of actual costs to the original estimated were 4 at Dungeness, 3 at Hartlepool, and 2 at Heysham. Hinkley Point B cost (in March 1982 prices) a little over £300 million more than had been intended. Given the estimate (converted to March 1982 prices) of £540.7 million, it came in at a modest 57% over-run, above estimate.

These figures were accepted, however reluctantly, by the CEB at Sizewell. Professor Burn, in his second volume on the subject, *Nuclear Power and the Energy Crisis*, suggested that cost estimates and conclusions on AGR's were 'presented in a favourable light' by failing to include the Atomic Energy Authority's costs for R&D, by omitting the public subsidy of fuel fabrication, and by omitting the costs of alternative electricity generation during the years when the station should have been generating the design 1320 MW and wasn't. (It still isn't.) These are examples

of what he describes as 'a wish to escape from the AGR facts rather than to understand them.'

But, as has been noticed, Hinkley wasn't as bad as some, and this could have been because of the pixies. When the contractors flattened the site to build the nuke, they flattened a pixie mound. Locals employed on the site, possibly remembering the five deaths during the construction of Hinkley A, kept a small plaster pixie on site, until management insisted that it be removed as a sample of superstitious nonsense.

The immediate outcome of that exorcism was that on 29 June 1977 the 18 inch sea-water feed-pipe fractured and flooded half of the pump-house. Station staff were unable to restore the supply from the other half of the pump-house because of a failure in a sectionalising valve in the sea-water system. One reactor was operating and had to be closed down. Because of someone's ingenuity in using fire hoses to link the cooling system (which cooled the oil used in the gas circulators) up to the local town supply, nothing overheated too drastically. The fire hoses cooled the gas circulators which dissipated the decay heat. The CEB tried to use the alternate system which valve failure prevented, thus creating a double fault. The CEB mentions neither the first fault nor the second in its glossy bumph about the nuke which the NPG built. As usual, something which couldn't possibly go wrong went wrong. Twice. The nuclear 'defence in depth' ploy has 4 stages: 'it cannot happen', 'it hasn't happened', 'it isn't serious', 'it cannot happen again.' So now, to back up the cooling water supply, all subsequent designs have permanent connections to public water systems.

Of course, the real lesson is don't mess with pixies. This should have been realised when they failed to have Hinkley B commissioned on schedule.

In their Annual Reports from 1967/68 to 1970/71 the CEB spoke of 'completion' by 1973. When denials of the pending over-run on construction ceased to be plausible, the wording was changed to 'completion of erection' by 1973. Commissioning lasted from 1974 until 1978, making a six year job (1967-1973) into an eleven year job, an overrun of something like 77%. Since, in March 1973, the CEB put the cost of substitute generation at about £3.5 million a month for down-time on a 1300 MW station, Hinkley should have been an embarrassment. So should the discrepancy between the 1320 MW design capacity and the laboriously achieved 1040 MW out-turn capacity. But it isn't, because as Professor Burn says, 'The atomic establishment had become adept in the art of failing without admitting failure.'

The decision to build AGR's grew out of the earlier decision to build Magnox,



which in turn was as much a military decision as anything else. In 1963, when crucial decisions about nuclear power development were being made, the sole AGR was of 30 MW compared to the 1320 MW design for Hinkley. Magnox reactors were operating at a gas pressure around 150 psi and Hinkley was to run at 600 psi. At Sizewell the CEBG has acknowledged that 'these early AGR stations at commencement of construction did not have a detailed design.' It is not necessary to have a degree in semantic analysis to translate this as 'we knew what we liked, but we didn't know what we were doing.'

Many of the problems were caused by high corrosion rates when the carbon dioxide was forced through two 90 degree bends soon after passing through the 'hot box'. As anyone who's ever stripped down an old BSA motor bike could have told them, this was bound to create tremendous turbulence. The noise levels were described as being greater than those found at the tail pipe of a jet engine.

A problem perhaps less easy to foresee was that changing a fuel rod created an upward flow of cold gas, causing outlet temperature to flutter and thus boiler control problems. Nothing that time and

a lot of money couldn't solve. In 1973 Arthur Hawkins, the Chairman of the CEBG told the Select Committee that AGR's have 'once-through boilers in a very difficult situation where, for instance, it is difficult to control the water-levels - you are facing two almost impossible reconciliations. You get corrosion outside in one condition and corrosion inside in the other.'

He also asked the Select Committee, 'Have you crawled through Hinkley Point? I have. It is so difficult to maintain, that the problem is keeping it in service for the fuel design life.'

In 1974 they had problems with the gas circulation. In 1975 it was the 90 degree bends again, wreaking havoc with the gas flow equipment, but by February 1975 electricity went on grid, even if it was less than 5% of the output planned for three years earlier.

All in all, Hinkley B hasn't done badly for the offshoot of a catastrophe like Dungeness, even if the CEBG's claim of November 1981 that 'both units have operated consistently at high output with the reactors producing 95% of their designed output' succeeds mainly in revealing CEBG's Public Relations attitude to the truth. The CEBG year normally runs from April to March: for the two



years encompassing Nov '80 to Nov '81, the outputs were 48% and 58% of the design capacity of 1320 MW. That is more typical of Hinkley B's performance than the 85% predicted by the AEA in 1965 or the illusory 95% claimed by CEBG's 1981 press release. The cumulative figures for the station show that from when it first went on stream, its cumulative factor (based on design MW) is 40%. But for the electricity consumers whose bills pay for this nuclear incompetence and inefficiency, the proper criterion is the load factor based on CEBG's initially scheduled date of 'completion' (i.e. 1973) and based on CEBG's design MW capacity (i.e. 1320MW). By that criterion, the cumulative output is only 35 Twh, rather than 124Twh, i.e. the cumulative load factor is only 28%.

Not tremendously good value for £540 million, plus an extra £300 million to make it actually work...well, to make it sort of semi-work.

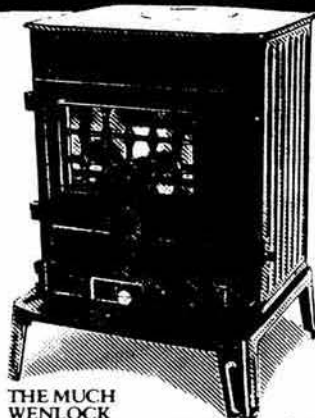
There's the odd kerfuffle, like the bloke down the incinerator who borrowed a few paint brushes - the rumour that 'lorry loads of stuff' had been borrowed was never substantiated - and did some DIY. He came into work so that all the alarms went off and they stripped all the plaster off his walls because his house was a little warm, radioactively. His wife was a midwife, but don't let it give you the creeps. They've improved security now. Maybe they were encouraged by finding an employee selling Hinkley Point toilet rolls on Taunton market.

**Tony Brauer**  
Avon Friends of the Earth

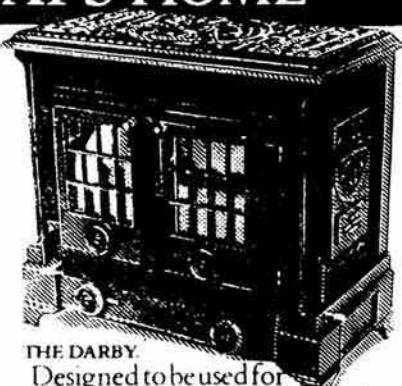
#### Sources

*Political Economy of the Nuclear Age* by Prof. D. Burn  
*Nuclear Power and the Energy Crisis* by Prof. D. Burn  
*The Nuclear Power Decisions* by Prof. R. Williams  
Prof. J. W. Jefferey's proofs of evidence at the Sizewell Public Inquiry  
*Safety Aspects of the AGR* by The Political Ecology Research Groups  
CEBG Annual reports, Press releases and Statistical Yearbooks

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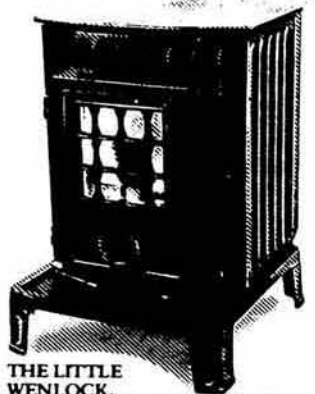


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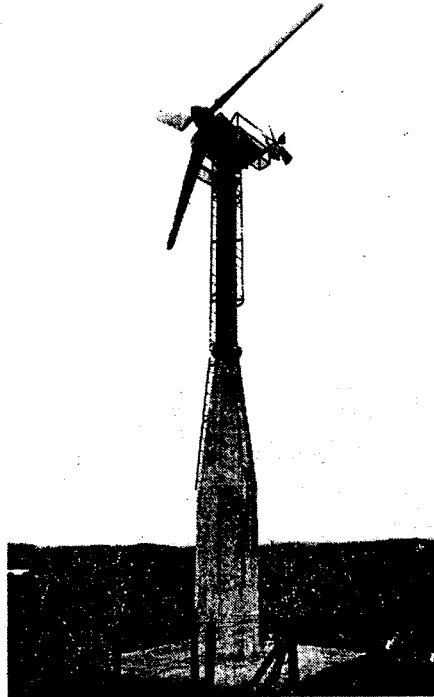
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THE BEST OF SAFE AND RELIABLE TECHNOLOGY

Plans to build a 60 kilowatt wind-generator on the lower slopes of the Pentland Hills near Edinburgh have been announced by the South of Scotland Electricity Board.

The wind-machine, to be built next to Penicuik on land farmed by the East of Scotland College of Agriculture, is much larger than the SSEB's only other wind-machine of 15kw near Prestwick. A Glasgow based firm, James Howden & Co, hopes to complete construction by spring of this year.

The project will investigate the economics and service performance of medium sized turbines for agricultural and small industrial applications, obviously a welcome step in the direction towards renewable energy, but this particular development is yet another typical example of the Electricity Board's piecemeal investment in renewable energy.

The Board's arrogance and self-esteem shine through. They have not even consulted local councils. They do not need planning permission, but small, localized energy schemes need local involvement and discussion. It



The SSEB's first aerogenerator at Auchincruive, near Prestwick. The Pentland one will be 60 feet high with a blade 45 feet in diameter.

seems the SSEB is in a world of its own. How did they arrive at this decision? Why this particular site? What other sites were considered? Are there any other renewable schemes under consideration? These are questions that councillors and citizens would like answers to.

The Pentland Hills are encroached on from all sides by development in various forms and some concern might arise in what may be seen as a new threat to the Pentlands. But it's certainly not comparable with the despoiling and polluting effects of nuclear development such as Torness, and to some a clean energy source in the form of a windmill will enhance the beauty of the Pentlands, a lot more than military firing ranges do anyway.

It will also give people the opportunity to see for themselves an example of renewable technology with their own eyes, something which will help bring home to them that it actually does exist, and should be taken seriously.

## More blow

The South Australian government has discovered that wind energy is likely to be a better option for the future than nuclear or coal.

According to a report commissioned by the government wind farms of smaller turbines spread over a large area is the



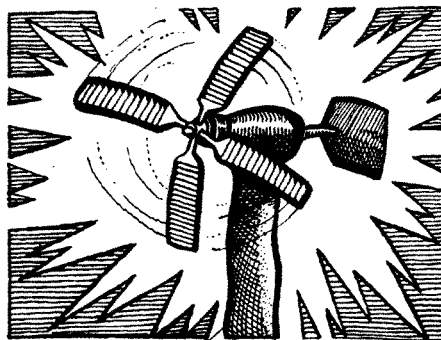
most competitive source of energy, despite having the biggest uranium mine in the world at Roxby Downs and vast coal stocks in nearby states.

A wind monitoring programme has been announced for 5 immediate possible sites, with 18 to follow.

BSEE December 1984

The rapidly growing wind power industry in America has resulted in the recent merging of two wind energy projects. The Solar Energy Research Institute and Small Wind Energy Conversion Systems have now formed the Wind Energy Research Center, acting as a research centre and an information service to the industry.

BSEE January 1985



## Tidal Talk

We printed an article by Jane Roberts and Janet Rowe outlining the case against the Severn Barrage in SCRAM 44. The article was reproduced in the November issue of the NATTA Newsletter (Network for Alternative Technology and Technology Assessment) and elicited a response from Dr Tom Shaw of Robert McAlpine & Sons Ltd.

Dr Shaw wrote, 'Rather to my amazement, I concluded having read the piece carefully that there was scarcely any truth in it whatsoever!'

Dr Shaw would like to arrange a meeting with the authors to discuss the Barrage providing, of course, that an independent observer is present to ensure that the records are properly kept. The authors stand by their original article, but it is interesting to know that McAlpine is involved in the Barrage project. It is hardly surprising that they disagree with the points raised as they stand to make a lot of money out of it if it goes ahead.

Any offers of 'independent' observers? Write to Sir Robert McAlpine & Sons Ltd, PO Box 74, 40 Bernard Street, London WC1.

## Parliamentary Gibberraneous

Mr Speller asked the Secretary of State for the Environment what he estimates to be the value of energy saved each year if homes still without cavity wall insulation were to be insulated to 1982 building regulations standards.

Sir George Young: 'If insulation were provided in the cavities of those dwellings in England which do not have insulation, the estimated saving would be about £600 million per annum.'

30 October 1984

Parliamentary Energy Group

Utility companies in America are not completely free to what they want, but are controlled by area commissions, who lay down mandates within which the utilities must operate.

At the moment the Californian Public Utility Commission is prosecuting San Diego Gas and Electric, the charge being for evading the CPUC's mandate to encourage alternative energy production. Previous judgements against other companies were upheld.

Parliamentary Alternative Energy Group

## Sad Loss

*Helios*, a magazine covering renewables in depth, has ceased publication after funding from the department of Trade and Industry was withdrawn. *Helios* had published for 8 years and its demise is regretted. *Atom*, the UKAEA magazine, has a secure future.

During 1984 the SSEB expanded their hydro capacity from 119 to 121MW, with the addition of Drumjohn hydro station, between Loch Doon and Kendoon Reservoir, at the head of the Galloway Hydro Scheme. The cost, £1.3m for 2.2MW, makes Drumjohn cheaper than Torness when costs per MW are around £1m.

The Galloway Hydros, 5 stations, 6 dams, and 2 tunnels, were installed between 1932 and 1936, at a cost of £3.1m, which included fish ladders and £4,000 for the re-erection of Castle Doon to

vanced, with the machinery later developed used worldwide. Even today the 'umbrella' type alternator designed for Galloway is still a viable product on GEC's sales list.

The scheme has operated with only trivial problems for nearly fifty years and is expected to continue for the next fifty. Today hydro stations, Galloway and the small Lanarkshire scheme, produce about one sixtieth of the SSEB's output at the lowest cost, 0.68 p/ut, with nuclear at 1.90p/ut.

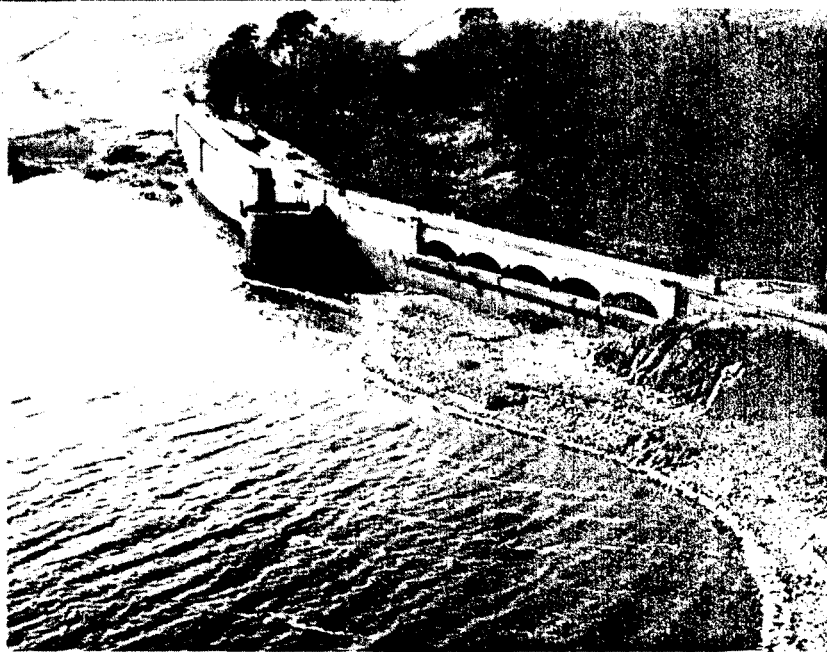
Gas and Electricity boards in the UK should follow the American example and provide cheap home surveys to establish how best to cut fuel bills, and provide financial assistance to help do so.

This is the recommendation of the Association for the Conservation of Energy in response to a call from Energy Minister Peter Walker to investigate countries where energy conservation is working, in his attempt to drag Britain from the bottom of the league in conservation.

The report shows how throughout America anyone can obtain on demand an energy survey of their home, provided by the local utilities. The law ensures that they cannot be charged more than \$15 for the service, and some utilities make no charge at all.

The house-holder is given full details on how they can reduce their fuel bills and keep warmer at the same time. Finance is available for wall, roof and floor insulation, heating controls, and thermostats and energy-saving lighting. Customers then pay back the cost of the conservation measures, often at below market prices and interest free, thus helping those who need it most, but cannot afford the capital outlay.

'One lesson we can learn from America on energy-saving is that these public monopolies providing energy to our homes have both a duty and an interest in ensuring we use it as efficiently as possible. We believe that our gas and electricity boards should be providing British house-holders with full home energy audits just like their American counterparts,' said an ACE spokesman.



Loch Doon dam showing the unique circular fish ladder used by salmon to reach the loch.

save it from disappearing below the rising waters of the doomed Loch Doon. The Galloway Scheme required the passage of a bill by Parliament, 1929, and opposition was anticipated from MP's for coal mining districts, but little materialised. However, as the grid developed, co-ordinated opposition from pit owners, land and sporting interests emerged, and all six Scottish schemes promoted between 1930 and 1942 were rejected.

Presently the North of Scotland Hydro Board's run of the river schemes are facing opposition from this old coalition, and sporting interests. It is perhaps not surprising that the UK still has 3,000MW of untapped hydro potential, about the size of the CEEB's PWR programme.

In its time Galloway was the largest integrated hydro scheme in the UK. It was utilised by the nascent national grid and established under the provisions of the 1926 Electrical (Supply) Act for peak load generation.

The technology at Galloway was ad-

Today dams and reservoirs are well regarded, but the changed face of Galloway did not pass unremarked:-

A raider comes today who kills  
The glories of our glens and hills  
With unheroic Acts and Bills  
and 'private legislation':  
The company promoter's plan  
Will doom the Deugh and dam the Ken  
And drown the Dee - oh damn the men  
Who plan such desecration!

W G M Dobie

'The Modern Raiders 1938'

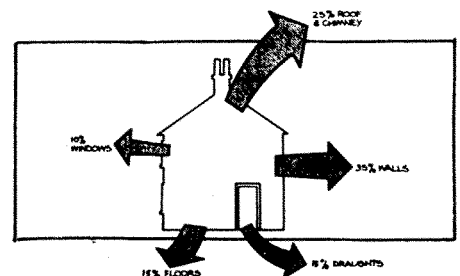
I wonder if SCRAM had existed in the 1930's whether we might have been the Scottish Campaign to Resist Aqueous Machinations? A worrying prospect, as we now hold hydros dear, so whither opposition to the Severn Tidal Barrage?

Tours of the Tongland hydro are available during the summer months.

Jeremy Adler

Source

Tunnel and Dam: The Story of the Galloway Hydros by George Hill (SSEB, £1.00)



The report is the second in a series of six on 'Lessons from America' prepared by the Association for the Conservation of Energy.

Contact:

Andrew Warren, 01 935 1495

## Geothermal

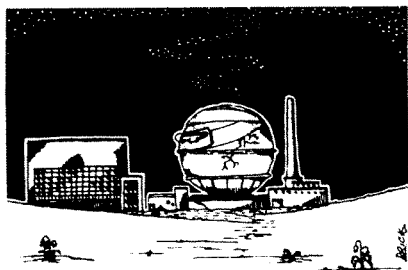
Geothermal energy could be cheaply obtained from the North Sea using disused wells. Total Energy Conservation propose to use single boreholes rather than the more usual 2 in combination with sealed generators. The company have 8.7m to proceed with a 2.5MW generator

Financial Times Dec 1984

Britain's miners have now been on strike for nearly a year. Over two thirds are still out and look like staying out.

It is, in effect, Britain's first major anti-nuclear strike. The dispute is not only about saving jobs and communities, not only about the balance of power in society, but also about what kind of energy policy and what kind of industry will develop in the UK over the next 50 years at least.

Tory energy policy quite clearly favours an expansion of the nuclear industry at the expense of coal fired electricity production.



If the Sizewell Inquiry says yes to a PWR in Suffolk the Tories want to go ahead with an extensive nuclear power plant building programme over the next 25 years. Why?

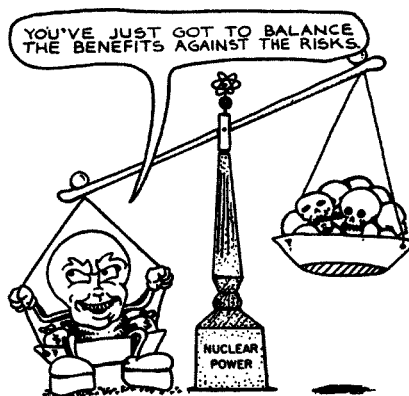
Firstly, as the leaked minutes from a 1979 cabinet meeting revealed, it is a deliberate means of undercutting the power of the miners. Thatcher's long term policy has always been to reconstruct British industry and society in such a way as to reduce Trade Unions to a state of powerless irrelevance. If the miners cannot be defeated in open conflict, their power can be greatly reduced by developing an alternative and state controlled means of producing electricity - nuclear power.

Secondly, a nuclear power programme in some form is needed for the continued production of plutonium. It is now fairly

certain the plutonium produced in 'civil' reactors has ended up in British and American nuclear warheads.

Thirdly, nuclear power is a source of great profit not to the national economies which subsidise it and consume its end product (electricity and bombs) but to the handful of multinational companies which control the market in uranium mining and in nuclear technology. Tory policy puts these three factors - profit, weapons production and social control - ahead of any rational attempt to match energy resources and needs.

The dangers of nuclear power have been well documented - at every state in the production process, workers, the environment and the public are exposed to the dangers of radiation. High grade nuclear waste may be our most enduring bequest to future generations. For years



anti-nuclear campaigners have been arguing that nuclear power is dangerous, expensive and unnecessary - it still is. Yet alternative directions in energy policy are being deliberately suppressed.

Eventually, if the world's fossil fuel resources and uranium supplies are used up, energy will have to be provided by renewable technologies - such as solar,

wind and wave power. Britain, however, has coal reserves for over 300 years at current rates of consumption. Whatever the long term balance in UK energy provision between coal and renewables it is clear that coal has a major role to play.

Immediately available is the option of converting coal fired power stations to provide combined heat and power - a major conservation exercise involving the piping of waste heat from power stations into homes for domestic heating - and of introducing measures to reduce emissions of pollutants from coal fired power stations - available technology could all but eliminate acid rain from this source.

Even allowing for little or no economic growth and some development of conservation and renewables, coal production will have to increase during the next 50 years, particularly if the use of coal in the production of synthetic fuels is developed. Closing workable pits now is simply closing off options - destroying resources that will be needed in the future. The Tories' alternative is more nuclear power. A viable safe energy future in our life time is at stake in this strike. It is a strike against nuclear power. Give it your full support.

Join your local miners' support group, collect money and food, join the picket lines if you can.

**South Eastern Anti-Nuclear Network**  
111 Albion Hill  
Brighton

## Acid Action

A contract to desulphurize a coal power station in Germany has been won by the British-based firm Davy McKee. The newly built Buschhaus plant at Helmstedt near the East German border was planned in the 70's when awareness of the Acid Rain problem was virtually non-existent, and it was built without the technology to control emissions of sulphur dioxide and nitrogen oxides. The plant, which will burn brown coal with an extremely high sulphur content, is at the centre of the fierce debate on Acid Rain, but will be allowed to start generating electricity as long as the desulphurizing technology is installed by 1987.

The contract, worth £85m, also involves desulphuring using the Wellman-Lord process (see SCRAM 45), at a nearby power station. The end product of both projects will be 85,000 tonnes of sulphur a year, to be marketed by BKB, the plant's operators. It is forecast that the venture will provide many jobs in the region which is heavily reliant on the BKB for its prosperity.

**Financial Times 14.1.85**  
**SCRAM Journal February '85/March '85**

## Coal

Scientists in Japan have discovered a cheaper way to remove sulphur dioxide and nitrous oxides (the cause of Acid Rain) from coal power station flue gases.

The gases are bubbled through a mixture of molten ammonium and sodium hydrogen sulphates with a catalyst (vanadium pentoxide.) Sulphur dioxide is oxidised to sulphate and nitric oxide is re-

duced to nitrogen, both stable compounds, unlikely to convert back, which allows the molten salts to be kept at a high temperature, a previously insurmountable problem. Apparently it's the catalyst that does the trick, and the molten mixture prevents dust from escaping.

**New Scientist 10.1.85**

## CHP

A district heating scheme has been completed in Switzerland using heat from a waste incinerator.

The station is capable of 20MW of steam, which is fed along a 2km pipe to an industrial area, branching out to heat a multitude of consumers. The scheme also involves a transformer station where hot water at 190°C is piped 3km to heat a hospital at Aarau.

In Britain the nine leading cities battling for 3 planned district heating schemes, of which Edinburgh is a favourite, still have no decision from the government after 3½ years of discussion. CHP (Combined Heat and Power) is becoming widely accepted as a possibility for future energy sources, but how long do we have to wait?

**BSEE Jan 1985**



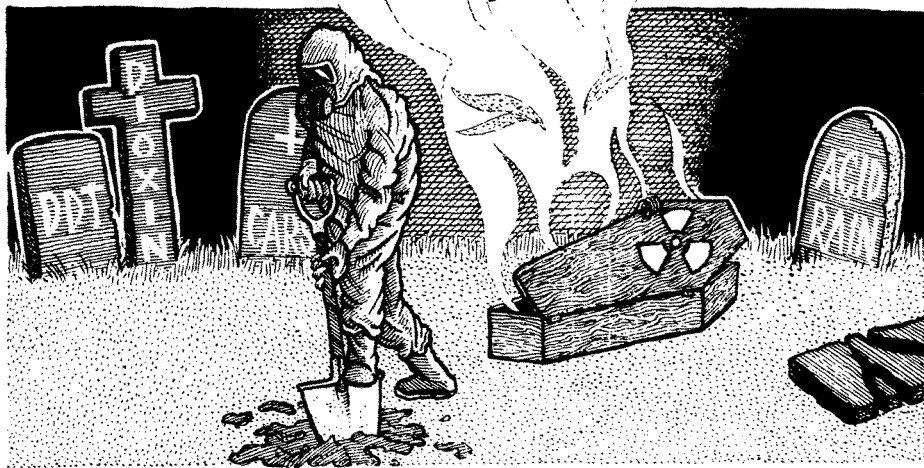
**Radioactive Waste: the Gravedigger's Dilemma: A Friends of the Earth Guide for the curious, the perplexed and the irate by Renee Chudleigh and William Cannell. FOE, £4.50, 87pp.**

The manner in which this booklet was paid for raises an important issue of principle: whether, or to what extent we should accept funding from sources which do not share our concerns. It is certainly risky, but that does not mean that it is always wrong. What it does mean is that it is time we analysed it and developed some sort of policy about it - the more so since the present instance is not the only one of its kind.

What happened was that FoE accepted £2,500 from a private firm for the production of this booklet. The firm, Rig Design Services, is part of a consortium known as ENSEC which is interested in a scheme for depositing nuclear waste (retrievably, they claim) under the seabed. This is known to be one of DoE's longer-term options; it is also known that Nirex has it under study.

The booklet itself says most things that one would expect of FoE; and in particular it condemns sea-dumping as presently practised. But it says nothing about *under* the seabed. The likely reason is that there is little to say anyway at present - but anything written would have been better than a silence which, under the circumstances, is wide open to misconstruction. Also, it is usual to acknowledge the receipt of financial aid in publications such as this. FoE did not do so. So they got the worst of all possible disclosures (*Guardian*, October 9th) under the charming headline: **Waste Dumpers fund Report Attacking Rivals**. It was all so unnecessary; do they not have a grain of political sense down in City Road?

One cannot ignore the background. We have by default created the nastiest society within living memory, where everything is for sale - including loyalties. All dissent, all independent checks upon Executive power are being relentlessly squeezed, especially financially. The pressure to accept funding from any source will grow. So not one of us, and not FoE either, is immune to the suspicion of venality unless we take the greatest care not to invite it.



In the present sad story some will inevitably see a fix. What I see is ineptitude. It has this consequence, that it will be difficult for FoE to support the under-the-seabed option - even if subsequent research should justify that attitude.

Now to a real grouse. These are important writers who should aim at the widest possible readership; which means that you force the selling price down, not up. Instead, FoE went mad and blew the lot on this extravagant format wherein one-third of each page, and sometimes more, is simply blank space. It costs £4.50 and is dearer than a Stationery Office publication of equivalent length. It could, and should have been produced for £1; so it will have no mass sale - which is a pity because in many respects Renee Chudleigh and William Cannell have delivered the goods.

It isn't really possible to summarise present non-policy on nuclear waste; but, to the extent that the thing can be done at all, they have succeeded brilliantly in setting out the main features, of course with particular reference to Billingham and Elstow. It follows ground familiar enough to us: the origins and nature of the wastes (though, oddly, nothing is said about foreign waste importations); a survey of the options for disposal which might be available; an examination of disposal vs. monitored storage, which opts on the whole for the latter, identification of reprocessing as the primary source of the problem and a proposal to abandon it; the way in which the Flowers proposal for an independent waste authority was sold down the river in favour of a front for the nuclear establishment; the tortuous and overly secretive way in which that front, known as NIREX, carries out its functions - it

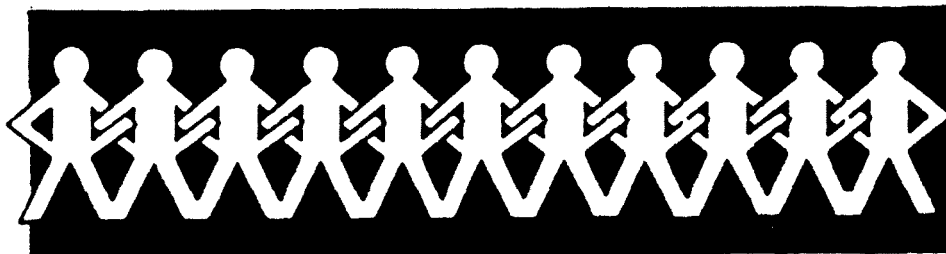
is all there and well-written, though bearing signs of hasty compilation. I should note, for instance (without nit-picking about it) that there are errors and omissions in the explanatory material at the back. One example is that although the term *curie* is frequently used, no definition is given.

But a few points of elaboration are worthwhile. 'While vaguely referring to a search through one hundred possible options, [Nirex] has announced the two sites at Billingham and Elstow without any satisfactory indication of criteria for selection of its short-list.' (p.4) Agreed, but I'll be bolder: I have never been able to understand how Nirex, given its limited resources and short period of existence, can possibly have scrutinised 100 sites even to the minimum extent essential. Again, those of us who support monitored storage at present do so for a very clear reason. This is that a bare 30 years' experience of nuclear waste in the mass is insufficient to justify irreversible disposal. But it is reasonable to assume that given, say, a further 100 years of research, this position may change and irreversible means of land-based disposal be sufficiently validated.

On p.51 a point is made quite sharply which many may have missed. This is that Elstow is intended for nuclear power station waste, Billingham for waste 'solely from spent fuel reprocessing plants.' Correct as to Elstow, not quite as to Billingham, for Nirex tell me that it is anticipated that some power station waste will go there also.

FoE do well to highlight two incidents which illustrate the secrecy and deviousness which make it so difficult to trust any official statement that cannot be independently verified. First, in 1983, the Ministry of Defence did make an attempt to deposit high activity waste at sea in defiance of international agreement and therefore in an underhand fashion. Secondly, and also in 1983, a US nuclear submarine was in collision with a sea dump which not only had no official existence but which seems also to have been more radioactive than international agreement permits (an inci-

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dent first revealed by SCRAM).

But it is in the more polemical part of the booklet that these authors are most interesting. They have a wonderful paragraph which puts the whole problem in context:— 'When faced with difficult questions of a technical nature politicians have a tendency to hide behind their scientific advisors...Scientists on the other hand are wont to say that they deal only in 'facts' by which they mean theories and data which omit social and ethical considerations. Confused citizens are left to ricochet back and forth between elected representatives and their advisors, as if in a hall of mirrors.'(p.23)

A wonderful quote: but Renee and Bill are in the hall of mirrors too – along with the rest of us. To start with, the word 'elected' is wrong. In the tight and secretive world of British officialdom – a world of many committees but few faces – the key people are not elected at all. Its main characteristics – enough fragmentation of responsibility to confuse everybody, an insistence that decisions cannot be modified no matter how irrelevant they become, the idea that people should be judges in their own cause and a monomaniac obsession with secrecy for its own sake – these are not peculiar to nuclear waste. They are endemic to the whole British political scene.

In their effort to reason about the

unreasonable these authors get into some odd postures. Sometimes Nirex is a virtuoso of Machiavellian conspiracy; at others it is a paper tiger. They talk at one point of 'the role of Nirex in policy-making.' Nirex doesn't make policy: the DoE does and (one suspects) inflicts it on Nirex. They allege that Nirex has flouted the authority of RWMAC; it wouldn't dare so unless so directed. They assert – we all do – that existing nuclear sites are adequate for waste storage problems without the need to foul up any other areas. What they do not state is that Nirex does not have the authority to mount waste disposal programmes on (for example) CEBG sites; it has to have its own. Later, in their conclusions, they want a thorough examination of the risks and costs of nuclear power 'in the context of a national energy policy. There is no national energy policy. There never has been.

All of it is valuable food for thought and only the conclusions are weak. All will accept the proposal to end reprocessing; but the conclusion on sea-dumping is bet-hedging and does not square with the spirit of its earlier language. All they ask for is a moratorium until 'a full international consensus is achieved.' Some of us are not prepared to risk this resource in exchange for a consensus. They propose that the DoE should develop 'a coherent approach to

the management of all radioactive waste' in full and realistic consultation with all concerned – yet on the opposite page they state 'The Department of the Environment has abdicated its responsibility to conserve and protect Britain's environment. On the subject of nuclear waste it sits in the lap of the Department of Energy.' Well – which do they mean? Abdications are sometimes followed by restorations, usually of an unsatisfactory character; but to promote this by urging the abolition of Nirex (their final proposal) and thus delivering us all forever into the hands of DoE seems to this reviewer to be going a little too far and in a wrong direction.

What is needed is what Flowers wanted: a genuinely independent waste disposal authority, independent of DoE too. It should deal both with policy and its execution, openly abandoning the dim-witted notion that the two can be separated. Its consultative mechanisms should involve environmental movements and the public – and not in the way the Chinese used to consult their dead ancestors. It is to this end that we should all be working, I feel; and to expand Nirex rather than abolish it seems as good a way to start as any. Of course it involves a shift in the realities of political power from Them to Us; but unless that is done the future looks very unpleasant, and not only regarding nuclear waste.

Don Arnott

**Greenham Common: Women at the Wire**  
ed. Barbara Harford and Sarah Hopkins  
(Women's Press, £3.95. 171pp)

'We began to understand that the message of Greenham was, "No-one can do it for you, you have to do it for yourself."'

This is the moving, sometimes harrowing, account by women at Greenham of how they began to do things for themselves – of how the peace camp was set up and how ideas and ways of doing things were evolved. Using letters, journals and interviews, it's personal and immediate, and reading it you understand something of what it's like to live there: 'We've been threatened with letter bombs now and we are having problems with marauding men in the middle of the night...,' 'the first lorry load of rocks and stones were dumped on what had been our home. Two of us went together to gather heather to make a mattress, while other women arrived and reacted to the scene of destruction, some with tears.' The book is a horrifying catalogue of the things which have been done to



try and suppress the protest: the never-ending physical and verbal abuse; repeated evictions; farcical courtcases followed by inhuman prison sentences; the CIA's attempted murder of two women talking about Greenham in America; and the accepted everyday inconveniences of wet clothes, not enough food, and lack of sleep. There are good times too, moments of exhilaration when the women cut through the fence, hold a vigil, receive a cheque, or flowers in prison. Always their strength and will to survive dominates

the huge forces set against them. As one of the women writes: 'What do you do with a revolutionary/who carries no gun/and admits to having fun?'

Greenham has emerged as a symbol of destruction, patriarchy and evil, but also of the ways in which that can be changed. *Women at the Wire* explores a whole new way of doing things – it's a challenge, an inspiration, a gift from the women at Greenham to be read, talked about, passed around and acted on.

Elizabeth Burns

**Sizewell Report. What Happened at the Inquiry?** by Martin Ince (Pluto, £3.95, 212pp)

No-one can make the Sizewell Inquiry interesting, not even Martin Ince. Skip the lists of submissions then, and read about energy policy in this country.

Energy policy being no policy of course. 'The basic flaw in the inquiry arises from a policy vacuum at the heart of the British energy establishment, and especially at the Department of Energy.' A policy could have choked the country with nuclear reactors, as it did in France, you could argue. But Ince is a master on who does actually decide what energy goes where. His second chapter is a fine summary of the power of the Central Electricity Generating Board and its nuclear ancillaries - UKAEA, BNFL, NNC - and it would have been good if he had carried on mapping this boggy terrain. You get hints of an essential paradox - that where the Government does have a policy, it is for profits, that is, they treat as a manufacturing industry what should be a service industry, where resources should be treated with the same meanness as NUPE workers. But the CEGB, or rather the area boards, are merchants. And that's something else Ince could write on more. And also, the 1983 Energy Act, he suggests, was passed in order to dismember the CEGB and the area boards for smaller area power boards, so that the power workers would not get too much clout. But their unions are notoriously quiet, in spite of their power, much greater than that of the miners. So more of that too.

His analysis of the CEGB's overview is very suggestive to ecologists. The CEGB takes the wide perspective of how many units, not possible conservation and resources used. 'Essentially what this means is that the important effects of energy conservation are not taken on board as fully as they would be if the possible energy savings in each sector were itemised in detail...In general, the more disaggregated the analysis and the closer the analysis to the power user, the more the potential for energy conservation appears to be.' (emphasis added)

He points out that one of Britain's few policies is to have the complete nuclear chain. On the UKAEA, he shows that it has the autonomy of a university, with the money and power of a government department, without any competing expertise outside. How very poor the Sizewell objectors seem by comparison! When CEGB bought the UKAEA's pup, the AGR at Dungeness B, the UKAEA lost face and Walter Marshall (a prominent figure

in the book) who went to join the CEGB - where he goes, that's where the money and power is. I wish he had talked more about that.

For 'from now on any British nuclear construction industry is going to operate on the CEGB's terms - a rare example of state enterprise rolling its frontiers

forward rather than having them rolled back under Thatcher. The move is an indication of the special status of nuclear power under this and other British governments.' But what about this Energy Act which is supposed to curtail the CEGB? More on that is wanted too.

R M Bell



**Too Much Pressure.** Cartoons by Brick. Ed. Kathy Challis. (Peace News, £1.50, 48pp)

'The wide ranging concerns of the community cartoonist.' In 60 cartoons Brick manages to cover a wide range of topics from global chaos to local problems. It is refreshing to see that although issues such as nuclear weapons, national and international politics, standard fare for the radical artist, appear, so also do many more mundane and frequently overlooked subjects such as social workers, housing, and inner city decay.

Whilst global issues such as nuclear weapons etc. are by no means unimpor-

tant, they are an obvious and easy target for every Bell, Scarfe and Gibbard, and what makes this book stand out is its extensive treatment of topics which are an everyday reality. The men in the pub with their wives draped over their arms like waiters with napkins, the Youth Training Scheme machine turning people into robots for a smiling employer, the Indian woman pulling a cartload of factory following the carrot on the stick of a work permit.

Edited and designed by Kathy Challis, a former editor of this august journal, this book is well worth 30 bob, so out you go to your nearest radical bookstore, and pick up a Brick today!

Wilf Plum

**Seeing Green** by Jonathon Porritt (Basil Blackwell, £3.95, 249pp)

*Seeing Green* is for the non-convert. A green would read it and find it makes obvious sense when Porritt takes a leaf out of Mrs Thatcher's book by calling industrialism that uses up resources and energy and economics that looks at monetary profit only, not at waste, 'bad housekeeping.' He is strong on the rationality of ecology that deals with things whole (in the context of the planet) and closely (effects on human beings, resources).

The main assumption of the book is

that left and right have both unthinkingly gone after profits and machines, economics and progress being their abstract gods. Porritt calls ecology the true radicalism which goes to the roots of things. However, there are some things he misses out - not religion, but the aggressiveness that can come from certainty; he is internationalist, and sees conflict as being over wealth, not ideas and tribal loyalties. But this aside, his politics like all ecological politics, always ask a fundamental question that other parties leave out - what is a good life?

R M Bell



## February

**8 Miners Benefit Gig.** Ink of Infidels, New York Pig Funkers. 8.00pm till late. £2. Moray House College, Holyrood Rd, Edinburgh.

**9 Public Meeting on Torness.** Speakers from all parties. 7.30. Dalkeith Community Centre.

**12 SCRAM AGM.** All welcome. 7.30. SCRAM, 11 Forth Street, Edinburgh.

**28 1958 CND formed.**

**NATO'S 'WINTEX'.** One of a two yearly series of exercises rehearsing the steps to war.

## March

**Sizewell Inquiry** should have finished by March.

**Miners' strike one year old.**

**1 1954.** First H-bomb test at Bikini Atoll.

**8 International Women's Day.**

**9 Commemoration of Clydebank Blitz** Speaker Bruce Kent.

**23/24 Oxfam Youth Fete.** Focus on Third World Youth. Battersea Park, London.

**28 1979 Harrisburg Day.** Near meltdown of Pressurised Water Reactor at Three Mile Island, Pennsylvania.

**30/31 National Freeze Meeting.** Birmingham. Contact:- Freeze Clearing House, 82 Colston Street, Bristol, BS1 5BB. 0272 276 435.

## April

**1 Annual Vigil by Peace Tax Campaign (PTC)** to mark the start of the financial year. Contact:- PTC, 26 Thurlow Road, Leicester, LE2 1YE. 0533 702687 (date to be confirmed).

**1-4 Conference on 'War, Violence and Social Change'** by British Sociological Association. Contact: BSA, 10 Portugal Street, London.

**4 1968** Martin Luther King assassinated.

**27-May 6 Environment Week 1985.** Focussing on the work of the Civic Trust. For ideas contact:- Civic Trust, 17 Carlton House Terrace, London, SW1Y 5AW (send large sae).

## May

**7 1979** Torness occupation.

**8 1945 V.E. Day** (Victory in Europe 1945). CND plan an alternative to the predictable jingoism. Contact:- Peace Action, 128 North Street, St. Andrews, Fife, KY16 9AF.

**12-27 'The Great Peace Journey'** A Swedish Peace initiative in all UN countries. London contact:- Gloria Frankel, 01 980 1030.

## June

**1 YCND Demo Glasgow.** Assemble George Square. Contact:- Dash, 041 331 2878.

**5 BNFL** to appear in Carlisle Crown Court to answer charges arising from a radioactive leak in November 1983.

**15-21 Celebration of Creativity.** Midsummer week at Laurieston Hall Community. For details of this and other 'weeks' please contact:- Laurieston Hall, Castle Douglas, S.W. Scotland. 06445 275.

**Every Thursday** Collection for Miners 6-8 p.m. in Princes Street, Edinburgh. Cans can be uplifted at Trades Council office 5.30-6 p.m.

**Every Saturday** Food collection for the miners at Mound Pedestrian Precinct 10 a.m.-4 p.m. Also base for leafletting and donations.



So Little Black Rabbit is hitching down the A75 past Chapelcross to the anti-Reagan demo in London when she gets a lift from a guy who does specialist concreting work - sewers, nuclear power stations, things like that.

Turns out your man has worked on Heysham nuclear reactor in Lancashire, built by Taylor-Woodrow. When asked about the quality of the work on that reactor the driver became quite animated. 'I wouldn't get Taylor-Woodrow to build a shit-house for me garden!' he quipped.

Apparently everything in the building industry is done on bonus - finish a job in a set time and get a bonus. Work slowly by, for example, doing a quality job and you lose money. Nuclear power stations are built by this system.

After telling LBR about the wastage which went on at the Heysham site ('waste that would make your hair curl') our friendly concreter told LBR about the time they took the shuttering off a concrete wall which had been poured and found that the dried out wall looked 'like an Aero bar', honey combed with air bubbles and so weak it would 'crack like an Easter Egg' if it suffered a shock such as an earthquake.

When concrete is poured between shuttering (basically a mould made of wood) a vibrating poker is put into the wet batch to settle it and let any air bubbles rise out of the batch. On this particular wall at Heysham this was not done and so the wall had no strength.

What to do? The wall should have been demolished and rebuilt. The foreman, working to bonus remember, told the squad to put a 'skim' of cement over the surface of the wall so that it looked OK. So the squad got their bonus and Heysham got a weak wall in the reactor area.

Taylor-Woodrow support the Tories. Perhaps they want to build a reactor near your burrow.



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