



SCRAM

The Anti Nuclear & Safe Energy Journal



No.36

40p



Nuclear Power KILLS Coal!

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This magazine is produced for the Anti-Nuclear, Safe Energy and Disarmament movements in Britain by the Scottish Campaign to Resist the Atomic Menace.

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Help needed

The work of our campaign is continually expanding, and this puts a heavy strain on the people working at Forth Street. **So we are looking for one or more people to come and help.**

There are a great many things to do, campaigning against the Atomic Menace!! Simple things like stuffing envelopes are as important as the editorial and design work of this magazine. Some of us work developing the SCRAM library and some of us in the Smiling Sun shop.

So if you have some time to offer please come and give us a hand. We can pay expenses. All the work done is important. **If you're interested please get in touch or come to one of our Monday meetings at 7.30 here at Forth Street.**

Thanks, SCRAM.

NUCLEAR POWER KILLS COAL!

The cover shows our artist's impression of the funeral of the coal industry - finally overcome by a fatal dose of nuclear power. Unless the miners **now** see the connection between pit closures and nuclear power and vigorously oppose the further development of nuclear power then the fiction of this picture will soon be fact.

Dear Reader,

This issue is just 12 pages long, an emergency measure to reduce the cost of producing this issue. It is in a way a signal about the financial health of our campaign.

The reality is that we cannot continue our present level of activity without your help and that of your friends. Our financial plight is set out on the enclosed yellow '83 APPEAL. In short we have been drawing on our reserves heavily this last year and these are nearly gone.

Of course it is understandable that many people have switched their support to the peace movement. We too do a fantastic amount of organising and campaigning for nuclear disarmament. But we believe it's also vital to sustain a powerful voice of opposition to nuclear power.

We want to go on campaigning on uranium mining, reactor hazards, transportation dangers, nuclear waste and all the unresolved technical, economic and political problems nuclear power creates. We also want to continue campaigning for safe, secure and less damaging solutions to energy questions - insulation, energy efficiency, combined heat and power and for renewable energy sources.

We are willing to do this, as we always have done, voluntarily without pay. But even just running our small busy office costs money, let alone the campaigning leaflets, preparations for nonviolent direct actions, printing and publishing we do.

CAN WE GO ON?

Not for much longer can we publish this magazine as it now exists. Being one of our major expenses [as well as one of our most important 'out reach' projects] it's here we shall have to economise.

THE ONLY WAY OUT IS TO INCREASE THE NUMBER OF SUBSCRIBERS. This is where YOU come in:

If you buy SCRAM regularly in your local bookshop PLEASE SUBSCRIBE. If you used to but no longer do PLEASE SUBSCRIBE.

PLEASE ENCOURAGE YOUR FRIENDS / YOUR LOCAL ANTI-NUCLEAR GROUP TO SUBSCRIBE. Only in this way can we broaden the financial base of support needed to sustain the Campaign. Subscribing as a Supporting Member gives us a small extra donation and keeps you in touch via the twice-yearly Members Newsletter.

So we need your comments, criticisms and suggestions, yours and your friends subscriptions and of course your donations. If you are in waged employment please consider diverting a small part of your salary to SCRAM using the Bankers Order Form on the '83 APPEAL leaflet.

We are nearly a fifth of the way to our £5,000 target. Please help - every £1 counts and will be carefully spent.

Thanks - The SCRAM collective.

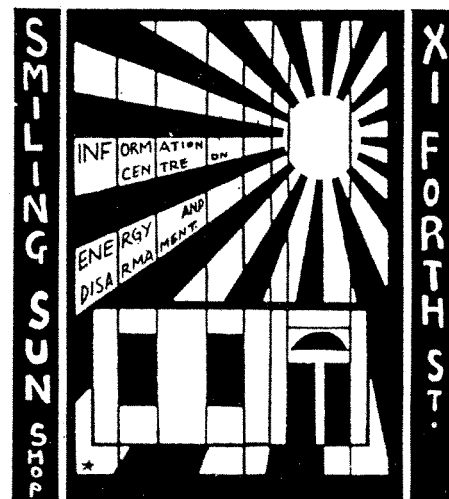
Classified

The newly created London Energy Centre is looking for a variety of new workers to staff their new Energy Conservation and Solar Centre. GLC salaries. Interested? Phone Linda Razzell on 01-633-2588.

An anthology of poetry inspired by the Greenham Common Experience is being compiled. Poems, short stories, graphics by women (or men) to Pat Van Twest, c/o Women's Centre, 44 The Grove, Bristol 1.

NATTA - the Network for Alternative Technology and Technology Assessment publish an excellent Newsletter (£5 p.a.) and several pamphlets inc: **Alternative Technology**: an answer to the energy crisis? (90p) and **Community Action and AT**: A guide for local energy groups (£2) both in new editions from NATTA, Open University, Walton Hall, Milton Keynes.

The Energy Advice Unit has just issued a comprehensive list of their publications on Energy advice, insulation, home heating, CHP etc. From Energy Projects Office, 2-4 Bigg Market, Newcastle on Tyne. (0632 615677).



OPBERON DESIGN.

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The Pits and the Pendulum.

In 1970 356,000 people were directly employed in the UK coal mining industry. Today the figure is nearer 279,000. Well over a million people are dependent on the continuing health of the mining industry for their economic and social existence - taking an estimate of the workforce in the engineering and supply industries and of the communities directly supported by particular mines.

With coal stocks at a record 52 million tonnes all these people are now at risk and the future of the coal mining industry in Britain looks bleak.

NUCLEAR DISPLACES COAL

With the commissioning of more nuclear capacity at Dungeness 'B', Hartlepool 'A', Heysham 1 & 2 and Torness this can only get worse. This is a savage and long-term side-effect of the expansion of nuclear power. Wholly unrecognised by the Labour movement which will be so devastated. The imminent destruction of the coal mining industry will cause widespread suffering in not only miners' families but also the communities they support.

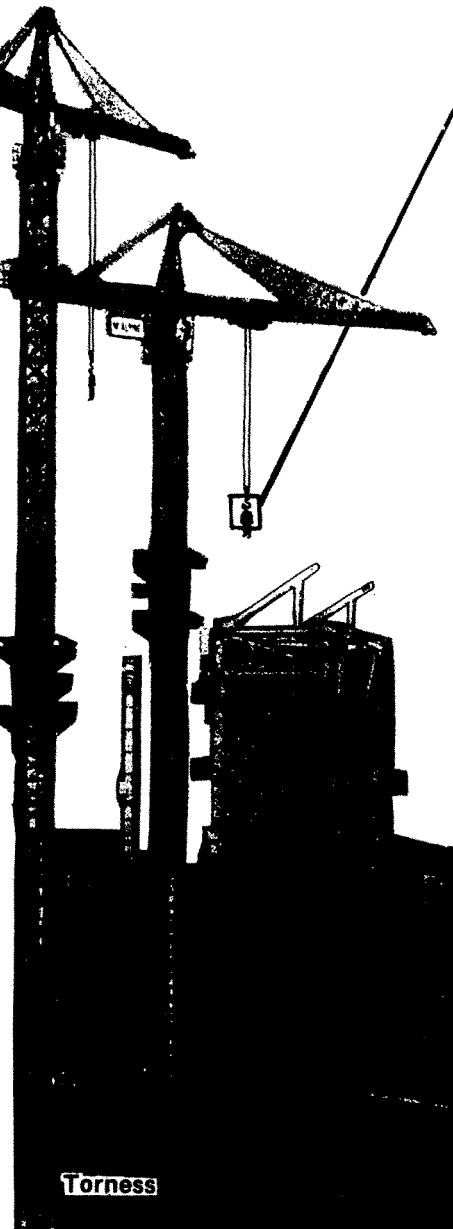
In November last year the NCB announced that they plan to close sixty pits over the next nine years, including five in Scotland because, they claim, they are close to exhaustion. Since then three of the five in Scotland have been closed - Kinneil in West Lothian and Sorn and Highhouse in Ayrshire. The other two pits under threat are Cardowan in Lanarkshire and Killoch in Ayrshire. Altogether this could mean the loss of up to 4,000 jobs.

COAL-BURN DOWN

Coal consumption in Scotland has been falling rapidly since the end of 1981, and there are fears that the closures won't stop there. In 1981/82 the SSEB bought 7.8 million tonnes of coal from the NCB. This year, coal burn is down by nearly 30%! As a result of the closure of the Invergordon Aluminium Smelter they will burn 0.75 million tonnes less. On top of this the burning of cheap North Sea Gas condensate at Peterhead power station (instead of flaring it off) for the next three years means the SSEB will require 1.5 million tonnes less.

Before the closures began the Scottish coalfields were producing 10.2 million tonnes of coal per year. Now exports have been hit by increased competition on European markets, and at home the steel and shipbuilding industries are deep in recession, so there aren't many customers left. With the SSEB being by far the largest customer - taking $\frac{3}{4}$ of production up till recently the NCB is over a barrel.

The SSEB's current low demand for coal is not just a temporary hic-cup



fact that they have plenty of coal reserves left. A so-called "hit-list" of 30 loss making pits includes Seafeld in Fife where nearly 2000 people work. However many of the loss makers are in the North-East of England. If Torness is commissioned, and the long-term demand for coal does continue to fall, the NCB won't necessarily close the pits closest in East Lothian, as suggested by local M.P. John Home Robertson - Monktonhall and Bilston Glen are two of the most productive pits in Scotland but they would close other more loss marginal pits.

The SSEB hope to export some of their embarrassing surplus of electricity to England. On top of this coal miners in the North-East have the almost-completed Hartlepool AGR to contend with, as well as the CEBB's plans to build a further nuclear power station at Druridge Bay in Northumberland. The marginal pits in this area include Horden which employs over 2,000 people, Lynmouth employing 3,500 and Bates employing over 1,000.

The only way to halt or even delay the total dismantling of the coal mining industry is to halt Torness and begin a programme of Combined Heat and Power Stations immediately as recommended by the all-party Select Committee on Energy. But Mrs Thatcher, it is said, has never forgiven the miners for forcing her first and only U-turn.

We can only hope that miners in Scotland and indeed throughout Britain will soon realise that nuclear power is the knife at their throats and join, in earnest, the campaign against Torness, and the Government's new nuclear power programme.

either. Although the gas supplies currently being burnt at Peterhead near Aberdeen are likely to be required by Shell/Esso at their new petro-chemical works being built at Mossmoran in Fife by about 1986 they have signed a 25-year contract to supply cheap gas to the Electricity Boards, "subject to availability". August 1986 is when Torness is due to be commissioned.

A long-term drop in coal requirements will put at risk other pits, on purely economic grounds, despite the

"It is better to die on your feet than to live on your knees." - Zapata.



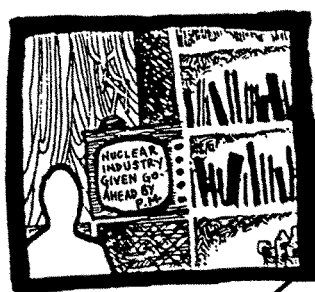
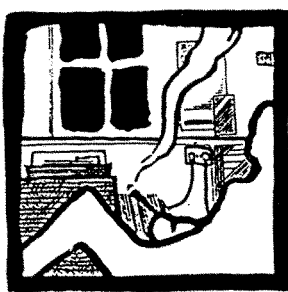
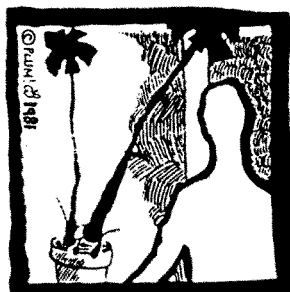
If at first you don't succeed....

AMERICA

The collapse of the American nuclear industry continues.

Economically a failure, the U.S. nuclear industry has again stumbled on the unsolved problem of waste disposal. The U.S. Supreme Court recently ruled that individual States may ban new nuclear reactors, until the Federal Government develops a permanent method for disposing of radioactive wastes. Waste transport has already been banned in many States, and the issue is quickly becoming a 'Nuclear Free Zone'-type focus for the anti-nuclear campaign Stateside.

The U.S. industry's solution to falling orders at home has been to launch an aggressive sales drive abroad, spearheaded by Westinghouse. This strategy for survival is becoming a familiar pattern worldwide, with Britain being a hesitant recipient (and very optimistic exporter) of nuclear technology.



Try, try....

Again.

BRITAIN

The National Nuclear Corporation (NNC) wants to sell a £400m. Magnox Nuclear Power Station to Bangladesh. After almost 20 years without a single sale abroad, the UK industry is now pushing for exports to developing countries. The NNC (a GEC-controlled consortium) hope to secure contracts with both Chile and Turkey in the near future. Of course the suitability of Magnox reactors for plutonium production will not be part of their sales pitch, but the generals they are negotiating with are clearly not only concerned with electricity production.

[Technology. 25.4.83]

FRANCE

Leading French economists have advised their Energy Ministry to put a 2-3 year moratorium on nuclear power construction.

Electricité de France (EDF) with 27 reactors under construction, are borrowing the equivalent of £3,300m. this year. And they have just launched a desperate sales drive, involving 600 salesmen and £36m. to persuade French industry to buy excess nuclear-generated electricity!

Struggling at home, the French nuclear industry hopes to bail itself out through exports. French companies are negotiating with China, Egypt, Pakistan, Morocco, Finland and Britain - the Sizewell PWR. And despite the Mitterand administration's public opposition to nuclear deals with South Africa the Energy Ministry is in favour of supplying a second PWR to the apartheid state.

[Electrical Review. 15.4.83./29.4.83]

It's all in the name

Sir John Hill has been succeeded as Chairman of British Nuclear Fuels Ltd. (BNFL). The new Chairman is a certain Mr. Con Allday. Need we say more?!

[BNFL News, May 1983]

Waving away Nuclear Power.

TIDAL POWER

North America's first tidal power plant, a 20 MW station on the Annapolis River, is expected to be commissioned in May or June, and the Canadians are considering a plant of 3,800 MW at Cobequid Bay.

Not to be outdone, the Soviet Union, which has had a 400 MW plant in operation since 1968, is designing a gigantic 100,000 MW project for an inlet of the Sea of Okhotsk.

[Electrical Review 15.4.83]

China plans to build 10 huge hydropower stations over the next 20 years. Together they will have a combined generating capacity of 50 GW - more than the UK maximum demand.

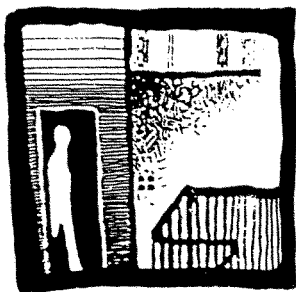
Sea you on the Barricades.

COORDINATED OPPOSITION

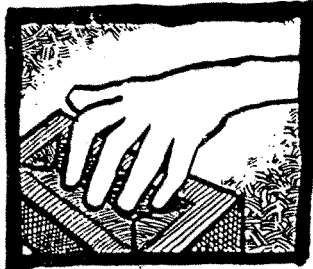
Following the London Dumping Convention meeting in February, where a motion calling for a two-year moratorium on sea dumping of radioactive nuclear wastes was passed, four major British trade unions, meeting on April 6th, agreed in principle to support a ban on the dumping of nuclear wastes.

The meeting, organised by Greenpeace, followed a resolution passed by the National Union of Seamen in March, proposing a ban on sea dumping of nuclear wastes. The Transport & General Workers Union, the National Union of Railwaymen and the train drivers' union, ASLEF, have all agreed in principle to support the NUS and their motion. Meanwhile, Greenpeace are continuing to liaise closely with the unions and other concerned organisations. This year's dumping programme planned by the UK, looks set to be faced with even more opposition than last year's. Contact Greenpeace on 01-251-3020/3022.

[Guardian/Glasgow Herald, 7.4.83]



AUTONOMOUS
DIRECT → ACTION



The U.S. Atomic Industrial Forum recently published a glossy brochure announcing that they have learnt their lessons from the near melt-down at Three Mile Island, Harrisburg in 1979. Nuclear safety and operator problems have now been solved, they say. But recent events in New Jersey, USA, prove otherwise. An "impossible" safety failure happened twice in three days at the Salem-1 pressurised water reactor [PWR] to the South of New York.

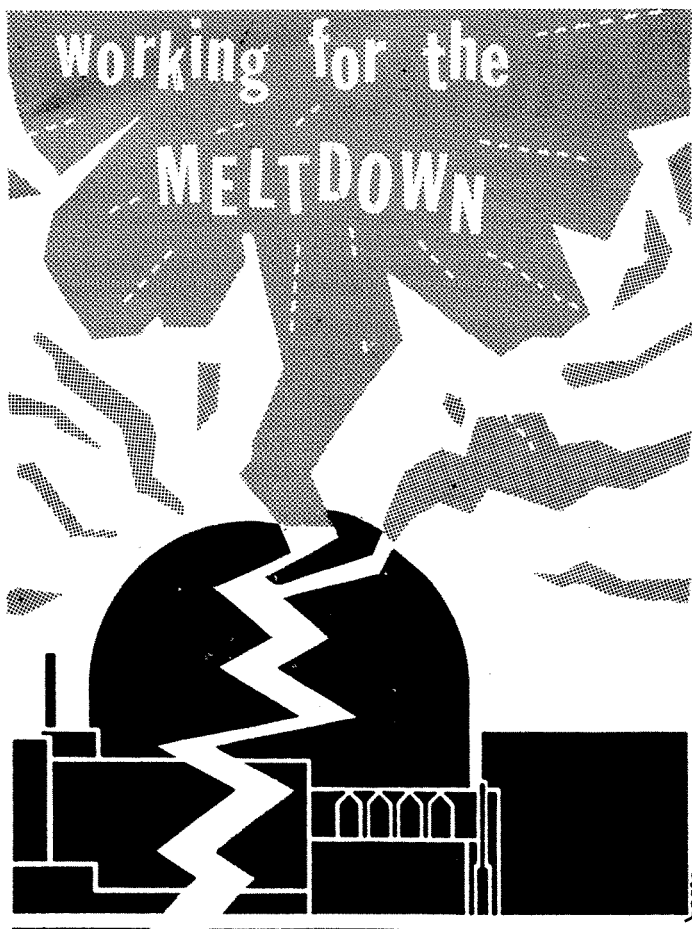
On 22nd February the reactor failed to close down when signalled to do so by the safety control systems. Staff had to intervene, turning a manual switch to shut down the reactor before it ran out of control. Just three days later it happened again - making a total of four such incidents at civil nuclear power stations.

These were potentially disastrous safety failures which the industry has always insisted were impossible - maybe happening once in a million reactor operating years, they said. These failures, in a Westinghouse designed PWR, will cause grave doubts about the safety of the Central Electricity Generating Board's proposed Westinghouse PWR at Sizewell.

Yet another 'absolute' assurance on safety and performance is cast to the wind. The time comes nearer when the promises of the designers and operators of these potentially extremely hazardous machines will be dismissed as misguided and pious hopes.

There are over a dozen major unresolved PWR safety problems including steam generator tube integrity, reactor pressure vessel embrittlement and cracking. So it is a travesty that the Sizewell Inquiry is not adjourned until after publication of the Nuclear Installations Inspectorate's full safety review of the Sizewell 'B' proposal.

If the public only knew how dangerous nuclear reactors are (and you need to tell them too!) it would be politically, as well as technically, impossible to build Sizewell "B".



CIRCUIT BREAKERS

The events which occurred at Salem-1 are called an "anticipated transient without scram" (ATWS). A "scram" in nuclear jargon is the emergency shut-down of a reactor; a "transient" is a sudden surge of power which, if uncontrolled, could seriously damage the reactor. The theory is that any twitch or surge, - a "transient", inside the reactor automatically triggers a set of electrical circuit breakers. These then release the locks holding the control or "scram" rods from descending into the reactor and closing it down.

The risk of relying on operators to deal with emergencies when the automatic safety equipment fails to operate is extremely disturbing, especially when operator error was specifically blamed for the accident at Three Mile Island. The risk is two-fold. First, the operators must realise within seconds that a scram is required and act - a delay of only 100 seconds could lead to serious damage.

Second, an operator 'scram' demands manual intervention - switching the reactor trip mechanism or going two floors down and throwing the switches by hand. This would be very difficult if combined with loss of power to the control room.

FALSE ALARMS

A further problem is that operators become accustomed to false alarms. This causes them to sometimes ignore

What happened

What happened at Salem was that the two huge "DB-50" circuit-breakers both failed to open when the safety systems signalled. The power increased dramatically. At the same time, on the first occurrence, a major circuit in the control room failed, cutting power to a reactor coolant pump and the control room itself. The lights briefly cut out before the back up supply came on. Some control indicators stopped working.

An operator, realising the reactor should be turned off reached for the manual 'reactor trip' switch. This sends a signal directly to release the locks holding up the 'scram' rods. **The handle came off in his hand...** and took several more seconds to re-insert and shut the reactor down.

By chance the reactor was only running at 20% of capacity and in both cases the operators fortunately acted swiftly.

danger signals. More disturbing in this case a senior engineer at the Franklin Research Centre in Philadelphia discovered an uncalled-for adjustment to a spring in a coil within the DB-50 circuit-breaker he examined. He speculated that this had been done by operators who found that the DB-50's were shutting the reactor down on false alarms.

These same circuit breakers are inexplicitly omitted from the list of key safety mechanisms subject to frequent checks. The Salem DB-50's

had been hardly maintained if at all.

REGULATIONS RESISTED

So the dangers of a reactor overheating and not being properly controlled are very real. The US Nuclear Regulatory Commission (NRC) recognised this and as long ago as 1973 drafted ATWS Regulations. These proposed additional damage-limiting equipment to prevent an ATWS becoming an accident.

These and three further sets of proposed regulations have been fiercely resisted by the nuclear industry and Westinghouse Corporation in particular. They contend that the possibility of this failure is negligible and that "the costs of changes proposed would be significant and are not justified" (NUREG - 0460, NRC 1978).

Commenting on the Salem failures the NRC Chief of Reactor Regulation, Harold Denton, said that the safety implications "were the most significant that we have had since Three Mile Island". What we want to know is whether there will have to be a real nuclear catastrophe before the switch is made to safer and more reliable energy technologies.

**Steve Martin &
David Somervell.**

(For a fuller report see Eliot Marshal's report in SCIENCE Vol. 220 p. 280).

Boltweevils are GO!!

Given that electricity cannot be transported in buckets, it is clear that transmission lines need to be constructed to distribute the product from a power station to the areas of consumption. The type and size of the lines depends on the amount of electricity to be transmitted. The environmental impact of such major new transmission routes across East Lothian was the subject of the Torness Pylons Inquiry held last Spring. The report was published this March and Steve Martin has been assessing it:-

The Secretary of State for Scotland, Mr. George Younger, upheld the recommendations of the Reporter (Inspector in England & Wales) but decided in favour of only one of the South of Scotland Electricity Board's routes, namely south from Torness to Eccles in the Borders and thence to England via the national grid.

The Board's second request was only partly granted; the undisputed section of

the route from Dalkeith substation to Humble was accepted, but the rest of the route, the 20 miles from Humble to Torness, was vetoed because its visual and agricultural impact was unacceptable. This part of the route was to have crossed some of the best arable farmland in the region and would have been visible for miles around.

"REDRAW ROUTE"

Mr Maycock, the Reporter, recommended that the Board go away and redraw the vetoed 'hillfoot' route, and submit a line with less obvious environmental impact. In fact such a route was submitted to the Inquiry by East Lothian District Council. This 'new dip-slope' route runs through the valleys of the Lammermuir Hills to the South and is effectively screened from view from all but the most athletic hill walkers.

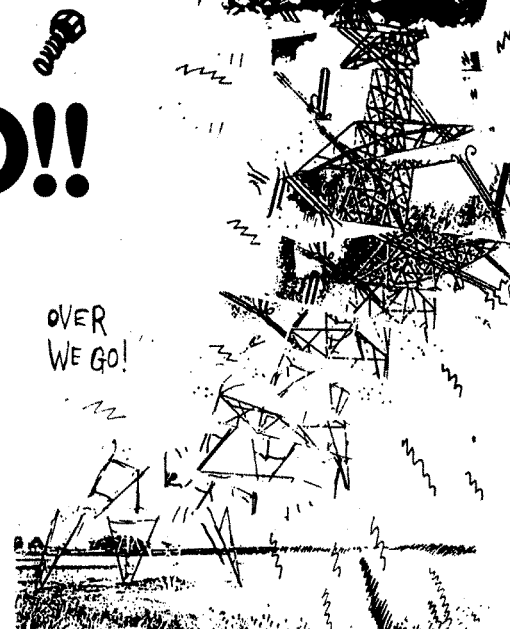
In their original application the SSEB stated that they wanted to start construction of the lines in March of this year. When asked recently, the Board said that construction will commence in the summer when the weather improves. As to refusal for the hillfoot route, they admitted that they have to do what the Secretary of State decided - build the District Council's route: "a victory for the planners", as the East Lothian Courier described it, and so it might seem if there weren't some other worrying aspects of this inquiry.

TORNES UNNECESSARY

Firstly, the Reporter accepted some points made by Lothian Regional Council (an objector): the SSEB's electricity demand forecast of 6% p.a. increase in 1974 has since been only 1% p.a. So there is a vast surplus of generating capacity in the SSEB's area (potentially over 100% with Torness); and the changed balance of costs between energy generation and energy conservation was significant. He accepted, in effect, that Torness was unnecessary, yet he stated at the outset that it is "no concern in the context of this inquiry whether or not there is a need for (Torness) ..." or "... as to how the electricity is to be generated...", so he couldn't take the points into account in his report - how convenient!

Secondly, Mr Maycock refused to accept that there was any risk to health from overhead transmission lines. This was despite a considerable amount of evidence presented by Hilary Bacon on behalf of local resident, Chris Ballance. She cited many instances when residents of Fishpond in Dorset had experienced painful and worrying symptoms since the construction of 400KV transmission lines over their village.

Much scientific evidence is available supporting Mrs Bacon, but the Reporter chose to believe the SSEB 'experts': it's unlikely that a "normal healthy person" will be at risk, and outside a new 15 metre safety zone "any detrimental effect experienced will be psychological in nature". Though these statements demonstrate the hard time that Mrs Bacon received at the



hands of the Inquiry, the recognition of a 15m safety zone is regarded as a welcome precedent - no more pylons can be built over Fishpond for example.

EIGHT REACTORS NOW POSSIBLE

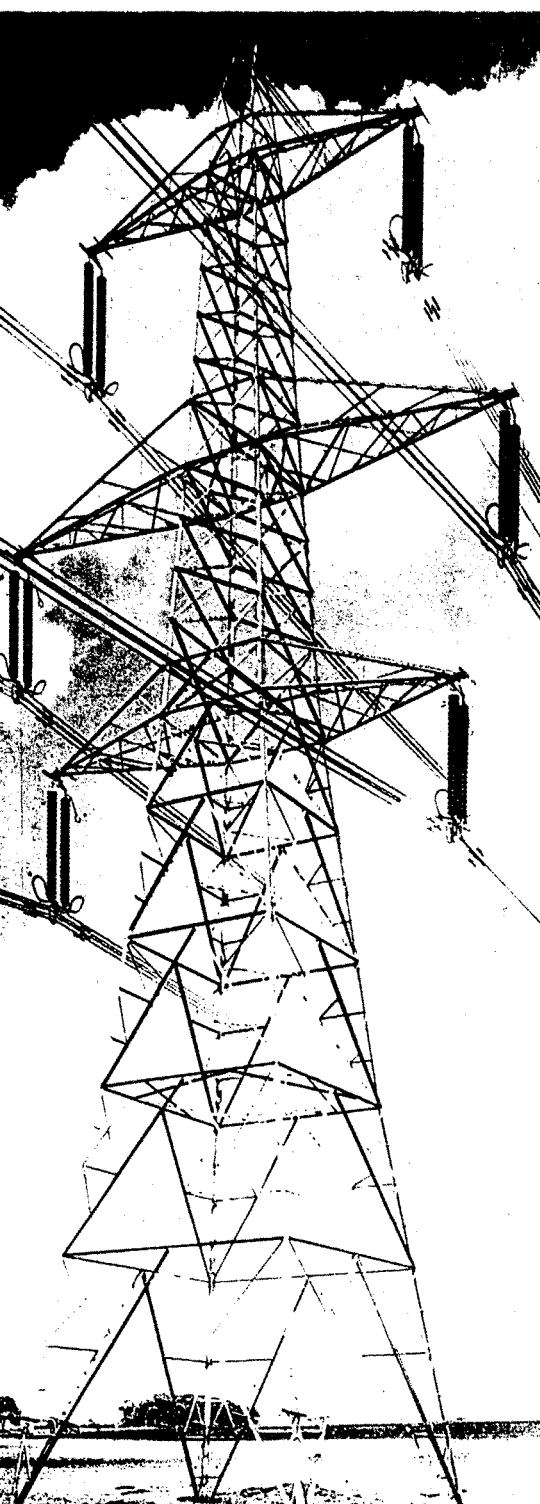
Thirdly, the Board requested permission for four lines (two routes of two lines each) when in fact, one line only would be sufficient to carry the power from Torness, and two lines would give security of supply due to faults and maintenance. Although Mr Maycock accepts that there is "some doubt as to whether the full capacity will be achieved having regard to the track-record for nuclear powered generating stations", he assumed it will be, and therefore granted consent for all four lines! This combination of lines will be capable of carrying the electrical load from eight reactors, with enough spare to cope with faults etc.

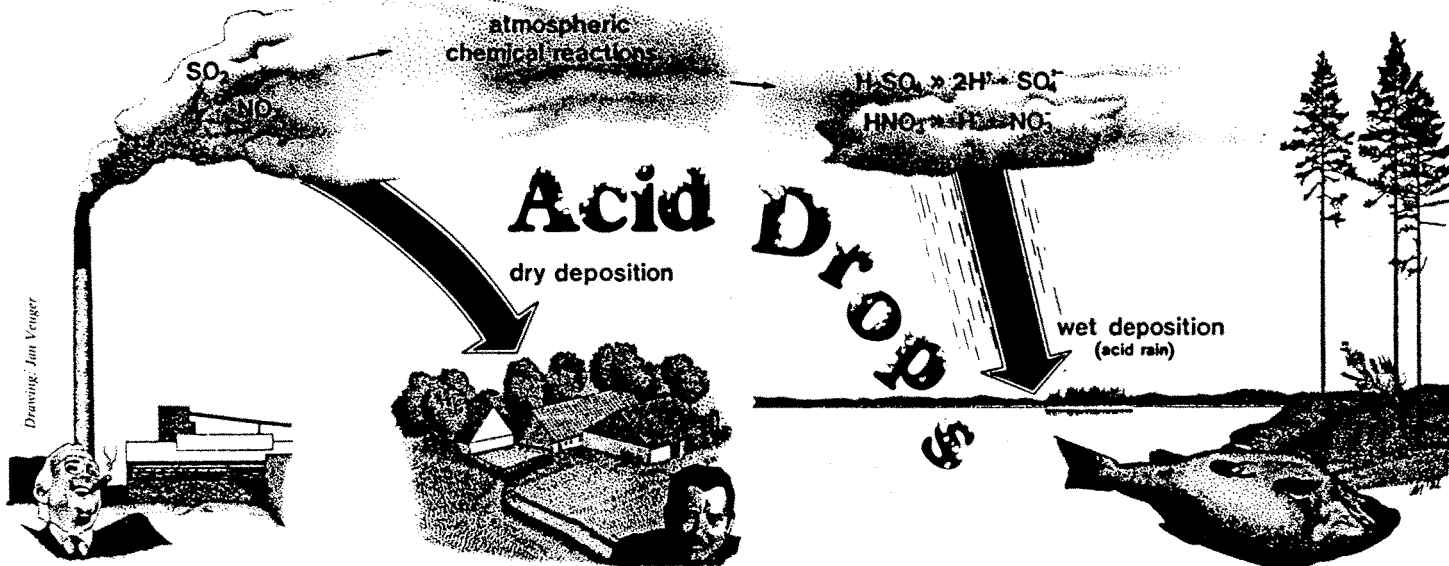
Finally, there are technical problems to consider with these proposed routes. Most importantly, the specified pylon (the L12 Tower) is a new design and has never been used in conjunction with the new 700mm² cross-section conductors. Because of this innovation, the Reporter believes that this new combination should be "erected as soon as practicable to see how it fares" in an exposed position like the Lammermuirs, as some "residual problems might remain to be resolved". The SSEB spokesperson, when questioned on this subject said that he "didn't foresee any problem".

BOLTWEEVILS

When giving evidence the Board went on and on about massive environmental and meteorological difficulties facing them if they had to build the line over the Lammermuirs; they neglected to mention another potential problem, namely the bolt weevil. This little beastie has been responsible for toppling numerous pylons in the United States. Recent observations suggest the existence of a small breeding colony somewhere in the Lammermuirs though naturalists are keeping the exact whereabouts a closely guarded secret.

The overall impression of the report is that however inept the SSEB's evidence the Reporter has given them the benefit of the doubt in most cases. The recommending of the 'new dip-slope' route was the only real exception. Nevertheless, his hands were tied because of the limited remit of the inquiry and, not least, because of the go-ahead given to the development at the wholly inadequate 1974 inquiry.





When sulphur-containing fossil fuels are burned most of the sulphur is converted in combustion to sulphur dioxide (SO_2). Some of this reacts with the atmosphere to release sulphuric acid (H_2SO_4). Much of this pollution falls to the ground within a few tens of kilometers from the source. But some is transported hundreds or even thousands of kilometers by the winds. At a distance from the source pollution comes down mainly as sulphuric acid mixed with rain or snow. This is what is called Acid Rain.

Sixty million tonnes of sulphur dioxide (SO_2) will be emitted into the atmosphere across Europe this year. Over half of this is attributable to power stations. Acid Rain caused by these emissions threatens the ecological balance across national boundaries. In Canada, in West Germany and in Scandinavia it has become a major political question.

Britain exports Acid Rain and this is not welcomed by the countries receiving it across the North Sea. So we have to work out ways of informing the public here of the problem and explore ways of reducing sulphur dioxide pollution.

As part of a project with Earth Resources Research in London Nigel Dudley from the Centre for Alternative Technology recently visited Sweden to meet with organisations campaigning against Acid Rain:-

"Most of the people who take pictures of this lake stand over here" - my Swedish friend tugged at my elbow "to get the tree in as foreground interest". Of course, the tree, foreground interest... To Scandinavians acid rain is no longer hot news. It's just a nagging worry that fills the calendars of conservation bodies, youth groups and anglers, as they continue their long struggle to make the rest of the world sit up and take notice. In Sweden and Norway the lakes are already acidic, the groundwater already acidified, the facts collected and data analysed to exhaustion. And they are increasingly cynical about politicians and scientists who still talk of the need for more research.

The links between sulphur dioxide (SO_2) chimney emissions in Britain and acid rain in Scandinavia have now been clearly established. And evidence is mounting that Britain's own countryside is suffering from acid rain. In addition there is the staggering cost of damage to buildings and machinery through corrosion. Growing scientific evidence, along with mounting pressure from other European countries is forcing acid rain onto the political agenda, and serious considerations are being given to international regulations.

A LONG HAUL

But Britain seems set to join with the USA in fighting control measures tooth and nail. At a prestigious meeting in April at the Royal Society of Arts in London, Dr. P.F. Chester of the Central Electricity Generating Board attempted to challenge the link between sulphur dioxide and forest damage. He questioned the usefulness of implementing controls and called pollu-

tion control technology the "billion pound solution to the million pound problem". But Chester skated over many of the issues, like the damage to building materials which bumps up the costs of pollution and avoided mention of the OECD study which found that pollution control was cost effective. Like the issues of lead in petrol, asbestos, DDT and many other environmental pollutants in the past, this will be a long hard haul, full of accusations of ecological paranoia, before the necessary controls are implemented.

SILENT, HIDDEN POISON

One of the problems for anyone campaigning about acid rain is that its effects are silent and mostly hidden. There are no apocalyptic devastations like the deforestation of the tropics, or heart-rending photographs of whales and seals being butchered. Driving through the beautiful countryside of southern Sweden it is hard to imagine a poison quietly at work. The lakes themselves look idyllic, with their crystal clear waters. But when you look more closely and see the absence of leeches, flatworms and snails and the large numbers of beetles and dragonfly larvae that have replaced them, that the extent of the damage really begins to strike home. In the lakes I saw there have been no fish for years; others are kept

A booklet explaining the issues will be published this summer and Friends of the Earth in London and FoE Scotland are planning campaigns. Meanwhile further information on the Scandinavian campaigns - a book, "Acidification Today and Tomorrow" and a newsletter, "Acid News" is available free from the National Swedish Environmental Protection Board, Dept. Info., Box 1302, S-171 SOLNA, Sweden.

alive only with expensive dosing with crushed limestone and by artificial fish-rearing. I have come back from my brief visit to Scandinavia convinced we are going to hear a lot more about acid rain in the future. But when you read through the mass of official pronouncements, bear in mind a few things as you do so:

ANY REDUCTIONS HELP

First, it is difficult to prove "conclusively" that sulphur pollution from Britain is causing the damage. Instead, like many other situations, the best estimate will have to be made from the available evidence. And here it must be noted that a considerable number of countries have already decided that the evidence is strong enough to justify joint action.

Secondly, the bulk of other countries have decided that any SO_2 reductions will help. Britain's stand that there is no proof that reductions will make any difference cuts no ice with our North European neighbours.

ACID RAIN COSTS....

And lastly, a point made several times at the 1982 European Conference on Acid Rain in Stockholm, is that there is no alternative to paying for controlling acid rain damage. We either pay with reduced life of buildings and machinery, stunted growth of valuable forestry and agricultural crops, and the silent, deadly damage to the environment or we pay to control it at source with national subsidies or slightly increased electricity tariffs.

Controlling acid rain will not be cheap, but then neither are its effects. The US Environmental Protection Agency estimates that acid rain causes \$2,000 million worth of structural damage every year in the USA alone.

A simple solution - reduce SO_2 emissions using smoke-stacked scrubbers etc. and reducing fossil fuels burned through energy conservation measures! Unfortunately not, because the countries that suffer most from acid rain are seldom the ones who cause it. So we can be certain of a long debate before anything is done. And as we all know, the Electricity Boards are wholly unwilling to listen to 'environmental' arguments. I asked Mats Segnestam the head of the Swedish Society for the Conservation of Nature, how he reacted to the accusations that the Swedes are obsessed with acid rain. "Yes we are", he said "wouldn't you be?"

Nigel Dudley.

The shape of things to come

Successive U.K. Governments have promoted what might be termed the "electro-nuclear" solution to a projected energy crisis. This policy, of forcing a switch to all-electric supplied by nuclear power stations, is not only potentially disastrous. It is causing havoc now in a mining industry faced with over 50 million tonnes of coal stocks and it perpetuates a growing scandal of damp homes inappropriately and inadequately heated.

Two interesting and valuable reports, published recently map out a more appropriate energy strategy which would be socially and economically preferable. The first, "Jobs and Energy Conservation", examines the immediate impact on unemployment of a major energy conservation programme. The second, "Energy Efficient Futures - Opening the Solar Option", looks further ahead at ways of making the transition from energy supplies based on limited fossil fuels to renewable or ambient energy sources. Pete Roche here summarises their main findings:

With unemployment at record levels, and likely to be a major election issue, the latest Association for the Conservation of Energy (ACE) report is timely. "Jobs and Energy Conservation" shows that up to 150,000 new jobs would be generated by a large, government-initiated energy conservation programme.

The 10-year investment programme proposed would pay for itself in annual fuel savings worth up to £2,800 million. More importantly it would provide literally millions of people with a warm dry home and energy efficient workplace for the first time in their lives.

PROPOSED PROGRAMME: DOMESTIC

The ACE report, prepared by a firm of international consultants called Environmental Resources Ltd., considered two energy conservation programmes, both of which would be fully cost-effective. The more extensive one involves, for example, all houses with less than 75 mm (3") of loft insulation being brought up to at least 150 mm (6").



Also over the ten year period the cavity brick walls of 6 million homes would be filled, 12 million homes draught-proofed and improved controls fitted to 8 million central heating systems.

Of the 8 million homes with solid walls which would be insulated more than a million would be economically insulated if this was done along with other necessary renovation work.

Double-glazing is rarely economic solely on energy conservation grounds but the authors assume that the living room windows of 8 million homes would be double-glazed.

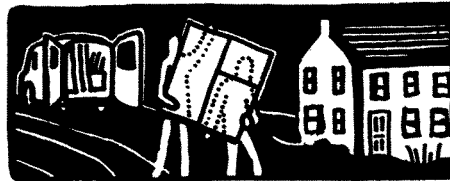
IMPROVING INDUSTRIAL AND INSTITUTIONAL ENERGY EFFICIENCY

The Department of Energy estimates that measures to improve energy efficiency, with a payback period of only 4 or 5 years, could be applied to half the country's industrial premises. It would be economic to instal draught-proofing in one third of all industrial buildings, new high efficiency lighting in 20% and new heating controls in 10%.

Savings of between 25% - 30% are possible in local authority buildings such as schools. Yet out of 504 authorities recently reviewed, only 175 were active in all areas of energy conservation and 300 had no programme whatsoever.

EMPLOYMENT IMPACT

The comprehensive programme proposed would eventually stimulate 100,000 new jobs in installing or manufacturing energy conservation equipment or materials. A further 55,000 jobs would be created by the spending of those newly employed and those benefiting from the energy conservation measures. On the other hand the effects on the energy supply industries would be small, with at most 2½ - 3,000 jobs affected.



EFFECTS ON INNER CITIES

A wide range of skills will be needed, but many of the jobs would be unskilled or semi-skilled. This would help alleviate unemployment in the chronically depressed construction industry. Launching the report earlier this Spring ACE pointed out that:-

"An active programme to save energy would also provide social benefits in terms of increased comfort and reduced fuel bills for those most in need - lower income groups, unemployed people, single parent families and pensioners. Many of these people live in inner city areas".

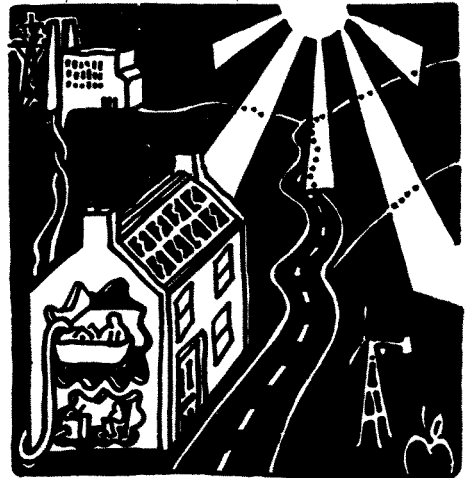
GOVERNMENT INITIATIVE ESSENTIAL

The report concludes that although the measures proposed are fully cost-effective there is a need for government grants of up to 75% to stimulate such a comprehensive programme.

The costs would be high but the authors forcefully point out that these would be offset by: the reduction in payment of unemployment and other supplementary benefits; increased tax and N.I. revenue; a possible reduction in the £300 p.a. fuel subsidies paid to low income households with hard to heat homes etc.; and of course direct fuel bill savings in instructional buildings. In all the net cost to the Exchequer

is estimated to be £10,000 per job created as opposed to £12,300 for the Government's current job creation in development areas.

So, while the industrial and commercial companies who finance ACE would be the first to benefit from energy conservation works on the scale proposed, it is clear that the social, economic and employment effects set out in this report would be very wide-ranging indeed.



LOOKING AHEAD

The second report is the result of over five years work by a team from Earth Resources Research. ERR was set up as an educational research charity by Friends of the Earth. In 1977 they were given a small grant by the Department of Energy to develop the theme of an alternative energy strategy up to the year 2025. This study has grown into a comprehensive 350,000 word tome of far-reaching importance.

"Energy-Efficient Futures - Opening the Solar Option", explores four different energy scenarios. The two "Technical fix" scenarios show that an alternative strategy is possible with a status quo economy continuing to grow. The other pair propose a more optimistic "conservator society" when for example:-

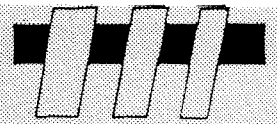
"... the character of the household changes as women become more integrated into the workforce and new divisions of responsibility between the sexes are accepted. There is a swing away from the excesses of the 'consumer society' and lifestyles becomes less wasteful... recycling and miniaturisation make the manufacturing sectors more efficient in their use of resources."

DRAMATIC REDUCTIONS

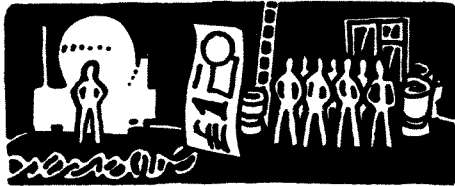
Whichever scenario is adopted the authors found that improvements in energy efficiency make it cheaper and easier to supply our long-term energy requirements from renewable sources. Their study finds that a serious commitment to conservation could reasonably result in the UK using six times less primary energy per unit of economic output than in 1976.

The technical fix scenarios are really the minimum essential to avoid the savage

New Hydro



consequences which would result if we are forced to return to world oil markets in the 1990's. On the other hand the conservator scenarios suggest that we should plan positively to adapt the economy to lower growth, through the more efficient use of resources, a shorter working week and a



greater distribution of income. They are based on the premise that full employment can be achieved without indefinitely rising levels of output. The study suggests a move towards small-scale businesses, community enterprises and local investment boards. Combined with the energy improvements of the technical fix scenarios this leads to a dramatic reduction in delivered energy consumption in 2025 to a quarter of its 1976 level.

ENERGY EFFICIENCY

As in the ACE report, energy conservation is fully integrated into the normal housing rehabilitation programme and building regulations for new dwellings are improved. New buildings would have a certificate of energy efficiency/inefficiency as has been done in California. There it has encouraged builders to exceed the minimum insulation standards. Even in the technical fix scenarios, houses built after 2000 would use ten times less energy for heating than old houses. And in industry the most significant conservation measure proposed is the replacement of electric motors with modern high-efficiency models.

It is this kind of massive improvement in energy efficiency, together with the fact that grants and loans are given to encourage people to switch from using gas and electricity to district heating, which leads to a reduction in electricity generating capacity to 17GW or less by 2025 compared with the Department of Energy's Energy Technology Support Unit (ETSU) projection of 152 GW or at least a dozen large power stations.

DISTRICT HEATING NETWORKS

The scenarios propose a major shift from consumption of fossil fuels in electricity-only power stations, to consumption in combined heat and power (CHP) stations. These would supply district heating networks designed to serve well insulated buildings, so lower water temperatures could be used, making techniques and materials cheaper. By 2025 up to 80% of domestic, commercial and institutional buildings could be served by these networks. They would be designed to permit a changeover to solar and other sources of heat.

It is envisaged that district heating schemes would be run by local heat utilities, which would also be responsible for developing renewable energy sources and integrating geothermal heat into the system. Common solar collectors and heat stores would provide the main contribution from active solar systems.

Six new small-scale hydro-power stations are planned for the Scottish Highlands. They are of the 'run-of-the-river' type, requiring only a small reservoir and having only minimal impact on the landscape.

The North of Scotland Hydro-Electric Board (NSHEB) estimate that the first two schemes, with generating capacity of 9.5 MW (enough for 2 small towns), will employ a workforce of 60 over a two-year construction period. They are on the rivers Grudie and Talladale flowing into Loch Maree, 50 miles west of Inverness.

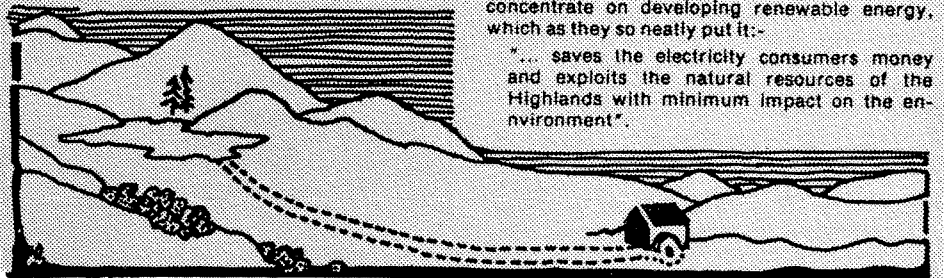
EXTREMELY CHEAP

They estimate total costs, including capital charges, operation and maintenance, of around 1.5p per unit. This is cheaper than fuel cost alone for coal - now about 2p or oil - about 2.7p per unit. Savings over 30 years are expected to be £12m, after the £8.5m costs are covered.

Cheap hydro-power can be greatly increased in UK without building large dams. Suggested projects include:-

- Installing generating turbines at non-hydro dams.
- Developing low-head, run-of-the-river schemes on medium sized rivers - being widely used in Europe.
- Developing the considerable potential of smaller high-head sites previously overlooked.

A study of hydropower sites in the Dovey Valley in central Wales suggests a potential output of 33MW - all from small unobtrusive schemes.



Methane from sewage, agricultural and forestry wastes, windmills in many combinations of number and size and small hydro power stations provide other sources of energy. Public funds would be available to local authorities, householders and private companies to develop renewable energy systems on the same basis as other energy investments.

TRANSPORT

In the technical fix scenarios road transport continues to grow at current levels and the use of public transport continues to decline. Despite this there is a striking reduction in energy use due to technical improvements, and biomass methanol or 'gasohol' begins to replace oil as the main energy source.

The most striking difference between the two sets of scenarios is in the transport sector. In the conservator society public transport plays a much more important role. Walking and cycling increase, and a new approach to land-use and town planning is assumed. Combined with efficiency improvements this leads to a very large reduction in liquid fuel consumption from 1,480 PJ (petajoules or 1,000 million joules) to 330 PJ in 2025.

NEW ENERGY INSTITUTIONS

All this implies major changes in our energy institutions.

Local controlled heat utilities and energy conservation agencies would be set up, and the authors urge that research and development into renewable energies should be moved from UK Atomic Energy Agency to an independent body. They say that the

EXPANSION POSSIBLE

Why are the NSHEB not building more hydro schemes? In the 60's they estimated that their hydro-electric capacity of 1,700 MW could be expanded to 2,200 MW. A more recent estimate suggests a potential of 3,100 MW. That's the equivalent of three large power stations with extremely low running costs.

The Board, who have had a joint construction programme with the SSEB since 1966 (the year they stopped building hydro!), say they would not get a Treasury go-ahead for more than a few tiny projects. This is due to the gross electricity generating over-capacity in Scotland - something which will be dramatically increased were Torness completed.

SCRAP STAKENESS!

Hydropower has a greater potential than official projections. The Hydro Board should renounce their plans to build a nuclear power station on the north east coast at Stakeness and concentrate on developing renewable energy, which as they so neatly put it:-

"... saves the electricity consumers money and exploits the natural resources of the Highlands with minimum impact on the environment".

electricity boards should be required to purchase surplus power from private producers - a recommendation embodied in the new Energy Bill going through Parliament.

The study shows clearly that national improvements in energy efficiency would be less costly than a programme based on nuclear electricity, new coal mines, synthetic natural gas plants or a return to importing oil. Although this would lead to a decline in the consumption of coal, for electricity generation, the coal industry is easily able to adjust because the programme is gradual.

It is obviously impossible in a short review to do justice to this long-awaited publication. It is an extraordinary mine of information of the kind needed to argue effectively against an overwhelmingly pro-nuclear establishment. It really needs to be read and kept as a reference book by everyone working or interested in energy. It clearly demonstrates that with two very different patterns of development it is feasible for the UK to be well on the way towards having a flexible renewable energy system by 2025.

JOBS AND ENERGY CONSERVATION, by E.R.L. 90 pages. £45 inc. from ACE, 39A Gloucester Place, London W1. (A broadsheet on the report and the ACE newsletter 'Fifth Fuel' are available free on request).

ENERGY-EFFICIENT FUTURES: Opening the Solar Option by David Olivier, Hugh Miall, Francis Neetoux and Mark Opperman. 300 pages, £38 inc. from ERR, 258 Pentonville Road, London N1.

PIECING IT TOGETHER: FEMINISM & NONVIOLENCE by the Feminism and Nonviolence Study Group, £1.50 [+ 25p p&p].

This book is not just about nonviolence in relation to struggles against nuclear power/weapons. It links together many violent aspects of society and tries to explain how women can start to overcome them.

The women who wrote the book together, gained their experience of nonviolent resistance in many different ways, and this gives the account more breadth. Women who experience violence from their husbands, or women who are victims of treatment from official organisations which is tantamount to violence, all seek ways of responding which will change their lives permanently. This book suggests that part of the process of change can come from women taking steps collectively to halt violence.

Through women taking positive action nonviolently, men can also be encouraged to develop caring human qualities, and perform supporting roles, instead of being put in the position where violent methods, or steps towards violence are expected of them.

The book explains what nonviolence means; it is not passive, but active resistance to violent measures. The group who wrote the book do not try to judge people who use guns to fight for freedom in the Third World:-

"It is not enough to denounce violence everywhere as if it were something clear-cut and equally dreadful in every situation; the point is somehow and permanently to reduce it and the damage it does".

Women do not always feel that nonviolence is automatically an appropriate response, in spite of their image as peace-lovers. Nonviolence has frequently been defined by men (by Gandhi for example) and by certain issues which it has been used against. The media's portrayal of women at Greenham as nurturers and mothers gives a narrow picture of women's reasons for opposing violence. The authors of the book stress that "we cannot fight for peace and ignore the violence on our streets and in our homes".

An interesting difference in this book from many others about trying to change our present conditions, is a description at the end of an ideal society as the Feminism and Nonviolence Study Group see it. This is a refreshing change from the horrifying descriptions of the aftermath of nuclear war which have appeared in so many books. I think I would rather hope for the best through the picture painted in this book than fear for the worst!

Piecing It Together is thought-provoking and it adds a lot to the discussions so many women and men in the anti-nuclear movement are having now.

Deirdre Armstrong

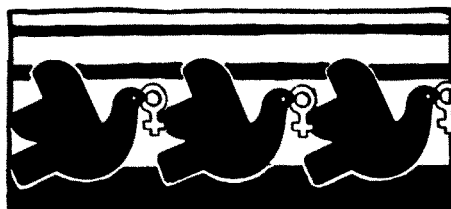
OVER OUR DEAD BODIES: Women against the Bomb. Ed. Dorothy Thompson, Virago, £2.95 [+ 35p p&p].



This book is structured in quite a different way to Piecing It Together. Rather than a group effort, this is a series of pieces collected together by Dorothy Thompson.

Poems, essays and letters cover all aspects of the nuclear industry. An excellent essay by Marjorie Mowlam called 'Fuel for the Nuclear Arms Race', points out the links between nuclear weapons and nuclear power stations. It shows how existing nuclear installations create extra danger even in a conventional war.

Hilary Wainwright spoke to women who work in factories manufacturing weapons systems, and found out why they find it hard to question what they are making. Women explained how they have such limited job opportunities, particularly where they are the unskilled workers, and the men are skilled. The need for feasible alternative plans for arms factories is clear, in the same way as it is necessary for alternative plans for workers in the nuclear industry.



There is a range of other essays, from women who take historical, personal and geographical starting points. The only drawback is the lack of illustrations - the small ones there are, seem to be inappropriate. Otherwise this book is well worth buying.

Deirdre Armstrong

RATIONALITY & RITUAL: The Windscale Inquiry & Nuclear Deci- sions in Britain. By Dr. Brian Wynne, British Society for the His- tory of Science, £6.50.

(Available from BSHS, Halfpenny Furze, Mill Lane, Chalfont St. Giles, Bucks.)

Brian Wynne acted as lay advocate for the Cumbrian-based Network for Nuclear Concern during the Windscale Inquiry and his close involvement with the proceedings gives a depth of insight to this book which makes it relevant to current events at the Sizewell Inquiry.

The book is unique in placing the 1977 Windscale Inquiry within its historical context. By tracing the development of British nuclear power policy the author is able to identify the major scientific and political commitments to nuclear technology over a thirty year period. Given these commitments the Thermal Oxide Reprocessing Plant, (THORP) appeared as just another necessary and incremental decision in a well charted development within the policy making enclaves of the UK.

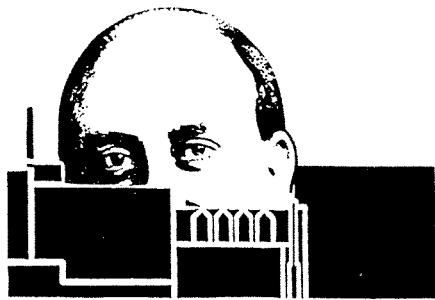
The author examines the Ritual aspects of this which include mystification by a combination of political secrecy and the use of public images of science suggesting both transcendent magic and absolute expert authority.

Of particular relevance to Sizewell is the manner in which the inquiry procedure embodies 'Judicial Rationality' as an ultimate arbiter of impartiality. In this way the scientific and political commitments to the project are stoically ignored and the democratic decision making myth preserved and strengthened. At the Windscale Inquiry detailed submissions by objectors and their expert witnesses were either ignored or completely misinterpreted.

At the centre of this book lies the contention that the nuclear debate is merely the outward manifestation of a much more fundamental schism within society. Ultimately 'authority and governability as such' are at stake and the author argues that the dividing line between apathy, alienation and revolt may be much finer than previously thought. 'Decisions' about BIG Technology, such as THORP, are really beyond our rational capacity and Ritual is needed not only to gain public acceptance but also to prop up the self image and morale of the nuclear establishment so that it can continue to function.

For those who follow the tortuous development of nuclear power in this country, those presently confronting the nuclear juggernaut at Sizewell, and those who just want to try and find a more adequate conceptualisation of the nuclear debate, then this book is recommended reading. In dealing with the pitfalls of the Windscale Inquiry the book may help prevent too many repetitions at Sizewell - though participation in itself must be included in the latest round of Ritual dressed up as decision making.

Ian Welsh



POSTWALLYS NOW IN STOCK

This fetching portrait of Sir Wally 'Domehead' Marshmallow, PWR, UKAEA etc. is now available as a postcard. Brightly coloured, it's indistinguishable from the real thing. Can be burnt as a small-scale effigy in ashtrays and has 1001 useful possibilities - even sending to friends! A snip at only 15p each or £10 for 100 inc. postage.

From Smiling Sun Shop, 11 Forth St., Edinburgh 1.

WALLY....

RUCTIONS

The CEBG's information and public affairs director, Michael Pickering, appointed only last September to boost the Board's falling image, has been forced to resign. John Baker, CEBG Board member responsible for Commercial and Public Relations affairs, said:

"The accent on nuclear matters which follows Walter Marshall wherever he goes was not apparent when Michael Pickering was appointed, and this led to difficulties...."

[Sizewell Reactions]

£5 sub to: SIZEWELL REACTIONS,
% EAAANP, 2 St Helen's St, Ipswich.



FROM YNNI -
£3-50 sub to:-
YNNI, Stryd y Castell, Aberystwyth, Wales.

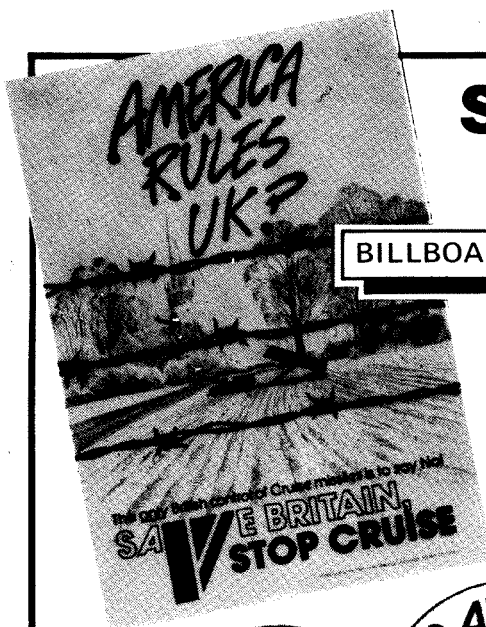
Youth CND.

On Saturday, May 7, 60,000 young people gathered in a muddy park in Brixton in the rain for the largest Youth CND Festival yet. So long was the march that **Gallery Macabre** and the **Damned** had both played before the main body of the march arrived. The huge crowd was matched by a large assortment of police, ranging from rooftop scrutinisers to riot-blinkered horses. In the event they were unnecessary and the masses, a few of whom had started to throw bottles and other festival debris at the stage, were soothed by **Clint Eastwood** and **General Saint**, who played the best set of the day.

By this time the sun had emerged and the crowd dried out (and dried up) to a short set from **Style Council**, followed, after a long wait, by **Madness**. And so it finished on a cheerful note, despite an earlier incident when some speakers from Greenham Common were cut short by a fusillade of bottles. It made me wonder how many people came to demonstrate and how many came just for the bands. Even so, the sheer size of the crowd was enough to generate a rush of spirit. We'll Rock the Bomb yet.

Willf.

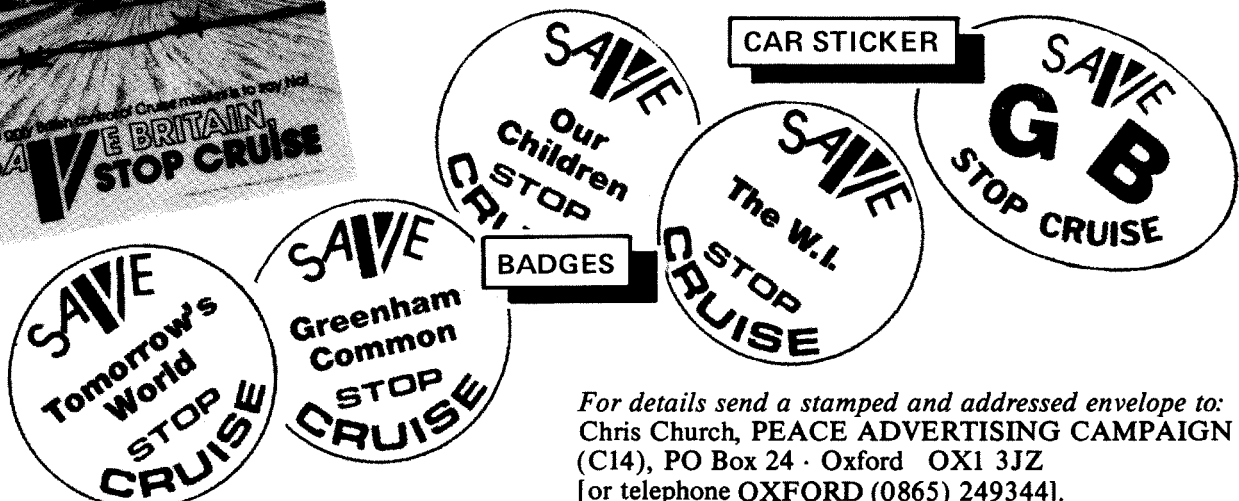
Meanwhile **Edinburgh YCND** are once again in desperate financial straits after the strain of subsidising four buses to London so contributions will be very gratefully received. Please send to: Festival Appeal, **EYCND**, 11 Forth St., Edinburgh



BILLBOARD

Save Britain...STOP Cruise

Many groups have used PAC's '£16 A WEEK ON ARMS' billboard poster. Now for the campaign against Cruise we have a new poster, to remind people that Cruise missiles are a real threat to us all. Along with the poster are a 'SAVE GB' car sticker and lots of 'STOP CRUISE' badges.



For details send a stamped and addressed envelope to:
Chris Church, PEACE ADVERTISING CAMPAIGN
(C14), PO Box 24 · Oxford OX1 3JZ
[or telephone OXFORD (0865) 249344].

DIARY

000 0

MAY

19 - Aug 5 **WALK FOR LIFE.** Details: 01-806-4615.

JUNE

4th **Anti-Sizewell Demo, LONDON**
Details: 0742 754691. Anti-Trident Campaign Convention Glasgow. Details 041-332-3141
National Anti-Vivisection Demo, Brighton. March & Rally to Animal Breeding Labs - Shamrock Farm. Details: BUAV 01-734-2691.

9th **Remember, whoever you vote for, the Government gets in.**

12th Faslane Peace Camp, 1 year old. Birthday Party.

16 - 18th Glastonbury CND Festival, Somerset.

20th **Coulport/Trident Inquiry** opens, Glasgow.
SCRAM A.G.M. 11 Forth St., 7.30 p.m. All Welcome.

BANKERS ORDER PAYMENT SCRAM CAMPAIGN FUNDS

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To the Manager Bank,

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Please pay on (1st payment) to Royal Bank of Scotland, 142 Princes Street, Edinburgh (83-51-00) the sum of for the credit of **SCRAM CAMPAIGN FUND 262721** and make similar payments monthly/yearly until cancelled.

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Annual sub for 6 issues:- Ordinary £5 ☐;
Foreign £7 money order ☐; Institutions £10 ☐.

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Members receive a 6-monthly review of the campaign. Annual membership:- Minimum £2

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Supporting members receive 6 issues of the SCRAM Energy Bulletin and the 6-monthly review. Supporting memberships:- Ordinary £7 ☐; Foreign £8 money order ☐; Life(l) Membership £30 ☐; Household £50 ☐.

Affiliation. Groups and organisations are invited to send for an Affiliation form ☐.

25th

SUN DAY - International Solar Energy Day - Details: 0926-37468

JULY

Early July

UK nuclear waste sea dumping programme starts. Contact Greenpeace, for actions, etc. 01-251-3020/3022.

4 - 8th

Greenham Common Blockade. Details 01-251-3133.

4, 11, 25th **Parliamentary Liaison Group For Alternative Energy Strategies Lectures - Revised Schedule:** David Gordon, 01-587-0194.

23rd

National Anti-Vivisection March & Rally, Wellcome Research Labs, Bromley, Kent. Details: BUAV 01-734-2691.
Trial of Faslane protesters, Dumbarton. Support welcome.

25 - 26th

AUGUST

6th

Hiroshima Day - Walk For Life arrives Greenham Common.

9th

Nagasaki Day.

20th

Edinburgh Flag Day for SCRAM.

Contact SCRAM for further details of these events.

Little Black Rabbit xo

Little Black Rabbit was out and about in East Lothian recently, and while waiting for a bus to take her back into Edinburgh, she bought an East Lothian Courier. Inside was an advert entitled 'Site Safe' 83' advertising a Gala Day near Dunbar. This terrific event, emblazoned across a whole page, which incidentally extolled the virtues of its sponsors, Sir Robert McAlpine and Sons, invited the people of East Lothian to witness a stupendous Tug of War, a championship no less. The whole point of the ad. suggested that McAlpines run safe happy sites.

There was just one problem. At the foot of page 1, a news story caught Little Black Rabbit's eye: "Torness Crane Topples" it said, "Ten site work-

ers at Torness Power Station had a narrow escape on Monday, when a mobile crane toppled, missing their Portakabin by only five feet.



"The 110 tonnes structure completely crushed a Portakabin some five feet from a second hut where the workmen were having their tea-break. The driver was uninjured. He jumped clear as the crane toppled, and was later treated for shock." Safe Site eh?

Advertisement



Forest Fire

The well-established Edinburgh wood-stove suppliers **Forest Fire**, offer a wide range of wood, peat and coal burning appliances for space heating, cooking and central heating.

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EDINBURGH1 (031-556 9812).

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