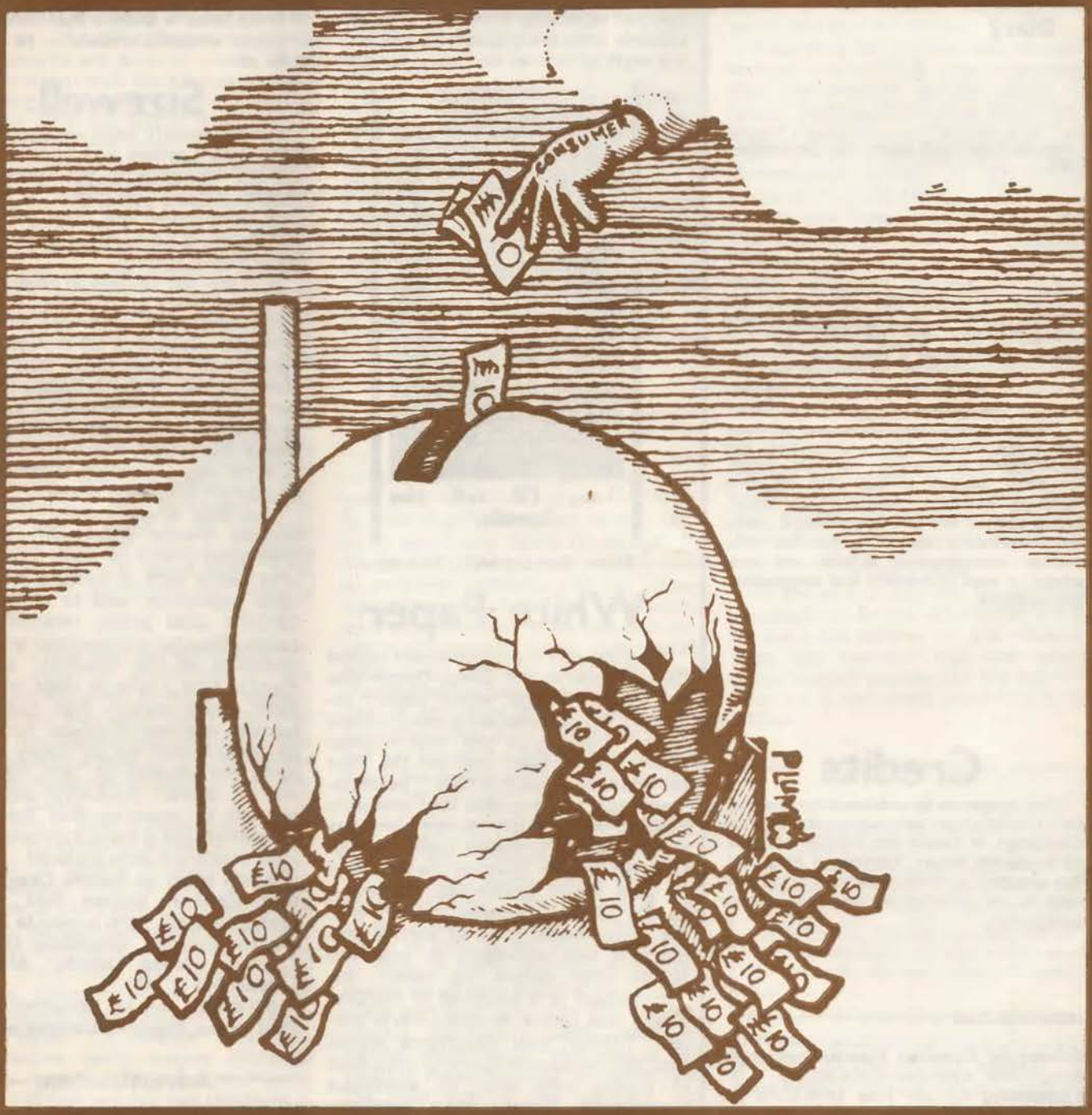
SCRAM

ENERGY BULLETIN

NUCLEAR POWER? NO THANKS

No 25

30p



Great Nuclear Fraud

The real cost of nuclear power

Exclusive

Contents

Copy date for next issue: 7th September, 1981.

This is issue number 25 of the SCRAM Energy Bulletin. It has developed and changed greatly over the years. The first issue, a duplicated 8 page free handout, was produced in 1977. Since then, we have learned a lot about producing a magazine and it is now typeset, printed and stapled.

From our beginnings as a local information sheet, we now have a national and international readership. For this reason, we have decided to call the magazine "Energy Bulletin" reflecting its broad-based appeal. We aim to provide a useful and interesting magazine for the anti-nuclear movement in Britain and elsewhere — your comments and suggestions are welcome.

Credits

This magazine is produced for the British Anti-Nuclear Campaign by the **Scottish Campaign to Resist the Atomic Menace, 30 Frederick Street, Edinburgh EH2 2JR.** We welcome contributions from anyone on local issues, although we cannot guarantee publication.

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Comment

The link between the civil and military uses of nuclear technology was brought abruptly into the public arena on June 7th, with the Israeli raid on Osirak reactor in Iraq. The raid was an open demonstration of the inadequacy on the nuclear Non Proliferation Treaty [NPT]. This treaty requires countries without nuclear weapons to agree to safeguards with the International Atomic Energy Agency [IAEA] — 41 out of the 113 NPT signatories have so far failed to do so. It is the IAEA, and not the government of Israel that has been most openly attacked during the past few months, on the grounds that its procedures to prevent the diversion of fissile materials for military purposes are ineffective.

The system depends on the collaboration of national governments, which are expected to disclose their activities in nuclear energy. The IAEA then inspects these delcared facilities at four to six monthly intervals. The IAEA admit that it would not be feasible to detect undeclared stocks of nuclear material. They also admit that it would be possible to use a declared facility for illicit production of weapon grade uranium or plutonium by simply removing all evidence on receiving notice of a forthcoming inspection from the IAEA.

There is in fact, no satisfactory way of stopping the proliferation of nuclear weapon capability from civil technology. It is up to us to ensure that these inescapable links are brought openly into the nuclear weapons debate — to remove the myth of 'Atoms for Peace' for once and for all.

From: Sunday Mail, 14.6.81

White Paper

On 23rd July the Government issued its response to the Select Committee on Energy*. The white paper reaffirms the government's commitment to the ordering of one new nuclear power station each year for the next ten years beginning in 1982. The statement from cloud-cuckoo land is clearly absurd. Firstly, the government has succumbed to pressure from the nuclear industry in ignoring the advice of its own Select Committee. Secondly, as the Select Committee pointed out, the astronomical price of such a programme was estimated to cost £15 billion even before the recent announcement of a doubling in the predicted cost of the Sizewell PWR project. Thirdly, past experience shows that the nuclear industry is incapable of coping with such an ambitious programme, unless they seriously intend to cut corners on safety.

*Nuclear Power, the Government's Response to the Select Committee on Energy's Report on the Nuclear Power Programme, Session 1980-81. Command 8317. HMSO, £2.30.

Sizewell

It has recently been announced that Sir Frank Layfield has been appointed the Inspector of the forthcoming Public Inquiry. Sir Frank is the QC who represented the Town and Country Planning Association at the Windscale Public Inquiry.

It is still not too late to object to the proposed PWR at Sizewell. The local authorities have confirmed that they will take account of all the letters received before they begin their formal consideration of the proposal in October. By July 4th, the official deadline, about 2,000 letters had been received. While this sounds like a fair number it is in no way indicative of the level of opposition to nuclear power.

The East Anglian Alliance Against Nuclear Power (EAAANP) the co-ordinating group for 35 groups in the area works hard to unite a dispersed rural opposition, and to counter the CEGB's local public relations campaign. They have to contend with such problems as the Councils' appointment of Prof. Leslie as their 'independent' safety advisor. Prof. Leslie is a founder member of Power For Good, an organisation set up solely to promote the benefits of, and need for, nuclear power! EAAANP need your support by ensuring that their local authorities get a correct picture of the level of opposition to Sizewell.

Write NOW to Suffolk Coastal District Council, Melton Hill, Woodbridge, Suffolk, with a copy to Department of Energy, Electricity Division, Thames House South, Millbank, London SW1P 4QJ.

EAAANP can be contacted at Old Post Office, Higham, Colchester.

Hunterston Blunder

The recent scarcely-noticed announcement that British Aluminium are to be sued for £30 million by the North of Scotland Hydro-Electric Board [NSHEB] is the latest twist in an extraordinary catalogue of blunders that could end up costing taxpayers a massive £300 million. The saga, involving the South of Scotland Electricity Board's [SSEB] Nuclear Power Station at Hunterston in Ayrshire and British Aluminium's smelter plant at Invergordon on the Cromarty Firth, is a telling indictment of the misplaced faith in nuclear power shared by the Government and electricity industry in the past.

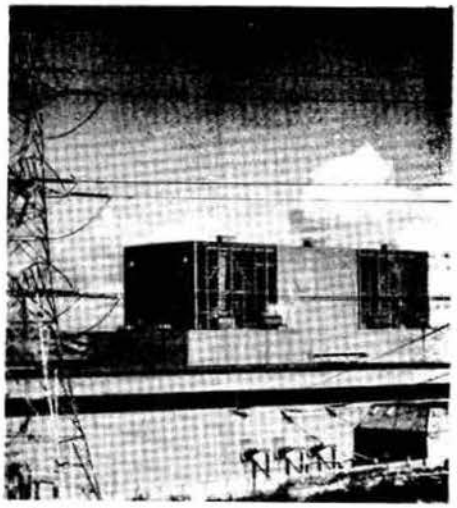
In 1968 the then Labour Government was anxious to attract jobs to the Highlands. In order to persuade British Aluminium to build a smelter plant in a remote part of a development area — instead of investing in a plant in Canada — the NSHEB encouraged by the Government entered into a long-term contract with the Company guaranteeing a supply of electricity for the smelter until the end of the century. The Invergordon plant, which came into operation in 1972, employs nearly a thousand people and has used almost a quarter of the NSHEB's entire output since 1974 — an average of around 1,700 million units a year.

The contract was framed in conjunction with the SSEB and was based on the promise of cheap and reliable electricity from the two Hunterston 'B' Advanced Gas-Cooled Reactors (AGRs) which were being built at the time. British Aluminium contributed to the capital cost of the reactors and was to pay annual charges "calculated on the basis of efficient operation of Hunterston 'B'" and subject to fuel and operating cost escalation. This was agreed in spite of the fact that there had been no previous operating experience of any commercial AGR anywhere in the world, let alone in Britain.

Trials of Hunterston

The trials of Hunterston'B' are evidently not over. In April a spokesperson for the SSEB confirmed that one of the reactors was shut down due to an electrical fault in a turbo-generator, although he refused to give any further details.

In spite of such a record, the SSEB persist in lavishing praise on Hunterston 'B'. In the March issue of Nuclear Engineering International, a senior member of the Board claims that "this design has been a success" and points out that this has led to its selection for use in the SSEB's next nuclear power station, currently under construction at Torness in East Lothian. Yet, in the same issue, the nuclear industry's authoriative world league table of reactor performance shows that up to the end of last year the two Hunterston AGRs were among the worst on earth, and easily the worst in Britain: one is ranked 159th and the other 170th out of 180 reactors. The smelter contract was based on the assumption of a 78 per cent load factor for the reactors: since they have started up one has



achieved a cumulative load factor of just 35 per cent, while the other has managed a dismal 19 per cent.

Further Problems

The subsequent history of Hunterston 'B' has not been auspicious. Delays in construction meant that it was completed four years late at a capital cost (of £143 million) 15 per cent higher than expected in real terms, both units eventually being on stream by March 1977. Since then the SSEB have experienced problems with the "looseness" in parts of the gas circulators; with refuelling due to the risk of cracking in the graphite sleeve surrounding each fuel element; and with the "ratcheting" of fuel pins. Above all the risk of the steel boiler tubes being corroded faster than was envisaged by hot gas forced the SSEB to derate (i.e. lower the design output of) Hunterston 'B' by 20 per cent.

As if this were not enough, one of the reactors had to be shut down in October 1977 following discovery that a valve had inadvertantly been left open, allowing 1,800 gallons of salt water from the Clyde to flood and begin to corrode the pressure vessel. In spite of initial confidence that the repair would take about a year to complete and cost only £14 million, the reactor eventually came back on stream after nearly two and a half years in February 1980, by which time the total cost of the accident had mounted to £57 million.

Taxpayers Foot the Bill

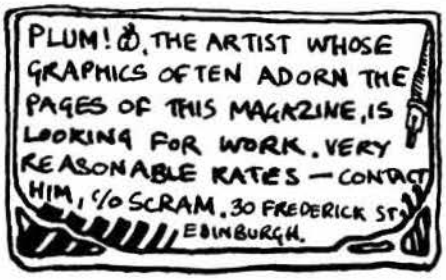
The failure of Hunterston 'B' to live up to expectations has meant that the cost of electricity for the Invergordon smelter has been much higher than allowed for in the original contract. Because of guarantees provided by the Government in 1968, the resulting penalty cost does not fall on electricity consumers — it falls on taxpayers. Every year since 1976 the Government has been obliged to lay before Parliament an order granting the NSHEB hefty compensation, amounting to a total to date of £100 million (this year's order has not yet been laid). On each occasion Parliament had no choice but, in the words of Labour M.P. Robin Cook who has taken a particular interest in the smelter contract, "to wince and sign the cheque".

Assuming that all goes well at Hunterston, the NSHEB have suggested that the average annual deficit in future years could be £9 million. This would mean that by the time the contract runs out in the year 2000 the total accumulated burden on the public purse will be £280 million.

This total however does not include the £30 million worth of disputed charges which are the subject of the current litigation. British Aluminium believes it is not liable to pay the extra costs due to the seawater leak and to the rocketing price of nuclear fuel reprocessing, as well as disputing certain other items on the capital account. The Hydro Board disagrees and is endeavouring to extract payment in what looks likely to be a protracted court case: if they lose, the accumulated deficit will have to be met by the Government, adding to their already cumbersome liability.

Stop Press

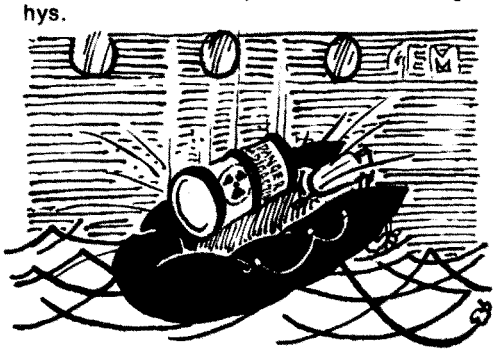
At the end of July the Government revealed that British Aluminium are to be sued **£40 million** by the NSHEB. They also revealed that this year's compensation payment to the NSHEB from the Government amounted to £9 million.



News News

Waste Dumping

The beginning of July saw a wide variety of actions against the dumping of medium level radioactive waste at sea. The events ranged from a march from Berkley Nuclear Power Station to the docks at Sharpness, to an occupation of a tower in the centre of Bristol. During the two days of dumping, in which 3,000 barrels of waste were thrown overboard from the ship, the Gem, members of Greenpeace once again risked life and limb in an attempt to stop the disposal. Using their rubber dinghys to obstruct the work, they were greeted by the full blast of water cannons. The workers on board the Gem made no attempt to avoid the dinghys.

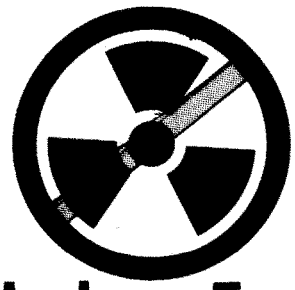


Glen Etive

For over a year an active campaign has been overseeing the activities of the Institute of Geological Sciences (IGS) at Glen Etive. The area is one of the proposed test drilling sites for radioactive waste dumping. Alistair Tennent has remained on the site all year with much support from all over Scotland and abroad.

Unfortunately, the campaign's donated boat was mysteriously holed whilst lying thirty feet offshore. The boat is now completely lost.

The group believe that the IGS have taken to using Land Rovers with the IGS symbol painted over, and other vehicles under the guises of various government sponsored bodies, e.g. Ancient Monuments and the Red Deer Commission. **Donations to this campaign can be sent to: Guardians of the Mountain, Clydesdale Bant, Account number 629401, Dollar, Scotland.**



Nuclear Free

More and more local authorities are declaring themselves nuclear free zones. Recent additions to the list are Vale of Glamorgan, Western Isles and West Midlands.

In response to the campaign by Barry Anti-Nuclear Group, the Conservative controlled Vale of Glamorgan Borough Council agreed to oppose the transport of nuclear waste through the area. But at the same time, the Council rejected a request to oppose the transport and siting of nuclear weapons in the area. Barry ANG is now calling on the newly elected South Glamorgan County Council to declare the area a nuclear free zone, and to oppose the siting of nuclear weapons, transport or storage of nuclear weapons or nuclear waste; and the construction of nuclear power stations in the area. For more information contact Terry Phillips, 16 Robert Street, Barry, South Glamorgan, 0446-740576.

The Western Isles' nuclear free zone policy includes the opposition to storage of nuclear weapons, nuclear dumping and nuclear waste transport. This decision was made just five days before the first shipment of plutonium nitrate left Scrabster for Windscale.

The West Midland's policy calls for a ban on the movement of nuclear waste through the country, and opposition to the building of nuclear power stations and reprocessing plants. Birmingham ANG are now pushing the Council to look into ways in which they can implement the policy.

War Game

The National Film Institute, which distribute the 'War Game' for the BBC, have announed that no more copies of the film are to be made.

Anti-Nuclear Council

The Anti-Nuclear Working Party of South Yorkshire County Council are producing a regular bulletin "to bring together in one place as many items of bad news for the nuclear industry as possible". The Anti-Nuclear Bulletin' is available from South Yorkshire County Council, County Hall, Barnsley, S70 2TN.

Plutonium Nitrate

After months of waiting, the first shipment of plutonium nitrate took place in the middle of June. On hearing that Scrabster Harbour was to be closed on Friday, June 12th, five members of Inverness HANG started a two day vigil waiting for the vessel, the Kingsnorth Fisher, to arrive. It was first spotted on the Sunday morning, but returned to sea due to bad weather. It was not until the following Tuesday that the ship finally managed to berth. The plutonium nitrate containers carried on two lorries was loaded on board, and the Kingsnorth Fisher set off on its 500 miles voyage to Workington.

At midday on Thursday 18th, the ship enterted the Prince of Wales Dock in Workington, followed by a Greenpeace Dinghy, and watched by 70 protestors. As the Kingsnorth Fisher docked, with, according to the press, armed police on board, the Greenpeace dinghy manoeuvred alongside and painted 'Death Ship' on its hull.

As the lorries drove off the vessel, anti-nuclear protestors chained themselves together, forming a human blockade. A large number of police roughly dragged them aside, causing slight injury to three people. The convoy of lorries and police vehicles was held up for about five minutes before speeding off to Windscale.

Inverness HANG, 1 Atterdale Road, Inverness; Workington Action Group Against Nuclear Shipments, 15 Scawfell Avenue, Workington, Cumbria.

Stakeness Inquiry

On July 1st a local planning inquiry was held at Banff into the Banff/Buchan District Council's policy of safeguarding the proposed nuclear site at Stakeness. Since 1969, Stakeness on the Moray Firth has been a proposed nuclear power station site. Originally, the North of Scotland Hydro Board was considering the site for a thermal nuclear power station, but the project was abandoned owing to the government's indecision on reactor types. Then, in 1978, the UKAEA announced that Stakeness along with Dounreay was being considered as a possible site for the first commercial fast breeder reactor.

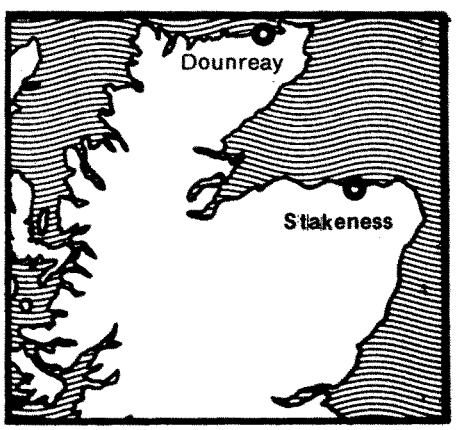
In December 1980, the Council published its Local Plan. Banff/Buchan Nuclear Opposition Group (B/BNOG) were among the fifty formal objectors to the Plan, on the grounds that the Council was passing all planning applications within a two mile radius of the Stakeness site to the Nuclear Installations Inspectorate for vetting. As the Hydro Board failed to attend a meeting convened by the District Council, a local planning inquiry had to be held.

Both the Hydro Board and the District Council were legally represented, while the objectors relied on their own speakers to state their case. The Reporter, Mr. G. Pease, was very helpful, and the objectors were given the freedom to air their views. The District Council's legal representative was very ill-mannered, constantly laughing and talking whilst statements were being made, and interrupting speakers. He insisted that objections related to nuclear matters were not relevant to the inquiry. However, the Reporter did not agree, and the speakers were allowed to continue.

The Hydro Board issued a statement indicating that the site would not be developed within the next five years. The District Council defended their policy of passing all planning applications to the NII for vetting, but indicated that they would no longer automatically accept the NII's ruling on each application.

The significance of the inquiry will not be its result, but in the fact that there is now a local awareness of the Council's policy towards Stakeness. Any future decisions will now have to take public opinion into account. Opposition to the nuclear development of Stakeness has been provided with a firm base.

For more information please contact B/BNOG, c/o Hugh Wilson, Hillhead of Lethenty, Fyvie, Banffshire; 06516-485.



Atom Free Embassy

The fourth Australian Bicycle Ride Against Uranium took place this year in May. The cyclists were publicising the Australian Council of Trade Unions' policy against uranium mining. On arrival in Canberra, the cyclists established the Atom Free Embassy on Parliament House Lawns. They need as much support as possible, so how about sending them a postcard to the Atom Free Embassy, Parliament House Lawns, Parliament House, Canberra 2600, Australia.

Vanishing Act

It appears likely that a cargo of uranium dioxide bound for Iraq from Brazil has disappeared. On January 15th, two planes piloted by the Iraqi Air Force left Brazil with a cargo of rockets and eight tonnes of powered uranium dioxide. One of the planes was forced to land in Africa by U.S. built jets, and offload its cargo. No-one seems to know who intercepted the plane, how much uranium dioxide was on board, or what happened to the cargo.

An official from the Brazilian Institute of Energy and Research has confirmed the story, although top Brazilian officials continue to deny it.

BNFL News

BNFL are trying to con the public — yet again! Their infamous Windscale reprocessing plant has such a bad name that they are now calling it the Sellafield Works after the nearby village.

Provided there are no objections, BNLF's shares are to be transferred from the UKAEA to the Secretary of State for Energy. David Howell has said that the transfer does not indicate any present intention on the part on the government to sell off any of the shares.

BNFL has signed an agreement with the French to use their technology for the proposed £200 million Windscale Vitrification plant. The plant is expected to be commissioned at the end of the 1980s, and will comprise of four lines, two for Magnox and two for oxide wastes. The plant will operate as a continuous process, with the end product comprising of about 25% fission products, and about 75% glass in stainless steel containers.

BNFL subsidiary, Pacific Nuclear Transport Ltd., has placed an order for a fourth purpose-built vessel to carry spent nuclear waste. At present the company has two such vessels for carrying spent fuel from Japan, with a third due to be delivered later this year for the European trade.

BNFL News, July '81

Alternative Nuclex

An Alternative Nuclex Fair is being planned for early October in Basle, Switzerland. The Nuclex Fair is an annual international gathering of the nuclear industry. The International Co-ordinating Committee of the Anti Nuclear Movement is proposing to hold a demonstration at the Fair and to set up an alternative fair displaying the dangers of the nuclear industry. In Britain, the Group Investigating Multinational Corporations has been set up to prepare material for the Alternative Nuclex.

Contact GIMIC, c/o SANE, 9 Poland Street, London W1. Tel. 01-486-4634.

Germany

At the beginning of June the DWK (German Company for Reprocessing) announced a site for a reprocessing plant near Kassel in central West Germany. The announcement has been expected since last summer, when a secret document was leaked listing the site. It became necessary for DWK to find a new site since the massive opposition forced them to abandon their plans to build a reprocessing plant at Gorleben. Several demonstrations at the new site involving thousands of people have already taken place.

WISE, 18.6.81

The Department of Nuclear Safety and Radiation Protection of East Germany has announced that it will deposit low and medium level radioactive wastes in salt domes at Morsleben near the West German border, beginning in July. The announcement has come at a time when experts from West Germany are becoming increasingly sceptical about whether salt domes are suitable. They say that after 125 exploratory drillings it is still impossible to ascertain that storage in salt domes is safe.

WISE, 2.7.81

URENCO Protest

Dutch anti-nuclear protestors are staging a non violent blockade of the URENCO enrichment factory near Almelo. The activists intend to prevent people entering the factory unless "they have come to close it down". URENCO is a consortium set up by West Germany, The Netherlands, and Britain for the enrichment of uranium. It is thought that about half the uranium used at Almelo comes from Namibia. 20% of the total enriched uranium from the plant goes to Brazil, which has not signed the non-proliferation treaty.

WISE, 18.7.81

Uranium

The second European Anti-Uranium Conference was held in West Germany in June this year. It was attended by representatives from seven European countries, as well as from Australia. As last year, when the first conference took place near Limoges, France, the 1981 conference was also held in an area affected by uranium mining — the Fichtelgebirge, near the Czech border. Uranium was mined in this area during the 50's and 60's, and recently ESSO have drilled an exploratory shaft with a view to starting mining operations again. About 80 miles east lies reputedly one of the most important uranium mining areas in the European Bloc — around the town of Pribram, Czechoslovakia.

The conference was organised by the local branch of the Bavarian Bund Naturschutz which is similar to our Friends of the Earth.

There was a wide range of talks and discussions on uranium related topics, as well as much valuable information exchange. The topics included how to use Geiger counters for independent monitoring of radiation levels, complete with a practical demonstration at the local 'hot spot', where ESSO has dumped rock from their exploratory mine shaft. Radiation was found to be several times the natural background, and sometimes exceeding the maximum permitted level.

Other topics included the possible use of old uranium mines as nuclear waste disposal sites, for political rather than safety reasons; the hazards of uranium mining in general and uranium exploration in the Third World, especially Namibia and South America.

One further important topic was the EEC and uranium within Europe. This year a further 2-4 fold increase has been proposed for the budget for uranium exploration and mining in EEC member states. A large part of this extra money is to go on a massive propaganda campaign to counter the anti-nuclear and anti-uranium movements in potential uranium mining areas.

In an open letter to the EEC, the conference demanded an immediate halt to all uranium development, and a reallocation of funds to non-nuclear and renewable energy research and development.

For more information on the conference and a full conference report contact G & G Winkler, Bahnhofstrasse 37, 8664 Stammbach, W. Germany.

Next Year

In Stockholm in June 1982 there is to be a massive 9 day United Nations Conference on environmental problems for government representatives. The Swedish Environmental Movement is planning a parallel 'Alternative Conference', and it is proposed that the next European Anti-Uranium Conference be part of that. This should be confirmed in the coming weeks.

More information on the 'Alternative Conference' and the next uranium conference from **Goeran Ekloef, Enrisvaegen 20, S-702 34 Oerebro, Sweden.**

Actions:-

photo: Mike Wall

Luxulyan

Since March 1981 the CEGB has been carrying out a programme of drilling at three sites in Cornwall, in order to decide on the future placement of a nuclear power station. A decision was due to be announced in Spring 1982. Nancekuke is owned by the Ministry of Defence — it is the site of a former biological warfare research establishment and is now a RAF radar base. Gurithian is a green field site with only a small residential population as the village has many holiday homes. Luxulyan — the present focus of media attention is the third site. At all these sites the CEGB has met opposition, but at Luxulyan this resistance has been the strongest, possibly because the landowner has openly defied the CEGB.

On May 13th a spontaneous action by Luxulyan Against Nuclear Development (LAND) developed into an occupation. After two weeks the CEGB served injunctions on 32 individuals in an attempt to stop the local people obstructing their work. But as the first group left the captured rig other individuals from Cornwall and North Devon took over.

The local people around Luxulyan are beginning to see the first signs of success in their determined campaign. One of the drilling rigs has been moved out of the county, while the other 'captured' rig has been greased up and temporarily immobilised by the CEGB. George Pritchard from the Cornwall Anti-Nuclear Alliance (CANA) discusses below some of the tactics that they have learnt through this action that may be of use to other groups elsewhere in the country.

Landowner Support

The first point is that where the landowner is willing to oppose the CEGB (or SSEB) at the very start of investigations into a nuclear power station site, he can delay the Board's work until he is served with an injunction. However, once this has happened, it is up to the local anti-nuclear group to take up the fight. The landowner must be seen to 'co-operate' fully with the CEGB. But the injunction does not force the landowner to call on the police to remove protestors. While they remain on private land, the police have no power to do so without a request from the landowner. As long as the protest is carried out by a small, well disciplined non-violent group of people, with plenty of reserve forces waiting in the wings, it has become evident that the CEGB soon run out of options.

Workers Contact

As well as getting the support of the local landowner it is equally important that contact should be made with the contractors at the earliest possible moment. In the case of Luxulyan this was done by two people going along to the CEGB's site compound, having a chat and making arrangements to have a drink with the men after they finished work. During the course of the evening we explained to them our reasons for opposing the work that they had to do. From then we built up a strong friendly relationship, always stressing the point that our argument was with the CEGB and not with the drillers. We also asked them to inform us if at any time our actions started to affect their incomes. Because of this strategy, the relationship between the drillers and ourselves has remained friendly throughout.

Police Understanding

During the past eighteen months CANA has built up an understanding with the local police. We have proved during that time that we are capable of policing our own actions and therefore any gatherings in Cornwall associated with us are likely to be peaceful. However, both the police and ourselves are realistic and know that one day it may well come that we are on opposing sides, but until that day comes and our actions are not against the criminal laws, they are not anxious to harass us in any way.

In conclusion, it may be said that the best time to oppose the prospect of a nuclear power station is before the Board gets their hands on the land.

CANA can be contacted at the following address: 2 Penhalvean Cottages, Penhalvern, Redruth, Cornwall.

Support Needed

A site manning rota is now in operation at Luxulyan with groups from the Cornwall Anti-Nuclear Alliance and others taking responsibility on a shift basis. There are ten posts which have to be guarded day and night — gates, road junctions, etc. A large number of people are required at any one time. It is important to continue the seige as until the drilling programme has been completed no announcement can be reasonably made on the siting of a power station.

If you can offer any support or go down there please ring 020-883-205 or 0726-850-079.

Heysham

On Tuesday, June 30th, anti-nuclear protestors staged a 24 hour occupation of the CEGB's 'Observation Tower', a lavish two storey public relations building overlooking the Heysham A and B construction sites. Visitors were greeted by an alternative version of the CEGB's 'You Can't Do Without Nuclear Power' exhibition and by 6 members of Lancaster University Half Life with a seven month old baby.

The first hour after Radio Blackburn's coverage of the occupation brought an unexpectedly supportive visitor in the shape of Councillor Barty Thorne, leader of Bradford Metropolitan Council and initiator of their declaration of a nuclear free zone. In addition, Nationwide's Look North programme carried the story as did the local papers and the Guardian the following day.

The CEGB's response was less enthusiastic, announcing to the press that provided no damage was done, the occupiers could stay until 'closing time' at 6 p.m. However, perhaps deterred by the presence of local reporters, they made no attempt to evict the occupiers after this time. The occupation continued uninterrupted until 11 a.m. the next morning, when the occupiers left as planned.

A press release was issued demanding an immediate halt to the insane waste of public money on the nuclear power programme.

Consumer Protection?

Electricity Consultative and Consumer Councils could play an important part in our campaign against nuclear power, but so far they have been largely ignored by the anti-nuclear movement. But apart from community groups opposing disconnections we are the only group with non-vested interests in electricity supply. It is important that these councils know what we think and why. In the past the Consumer Councils have interpreted their terms of reference rather narrowly. But recently there have been signs of them pushing for increased conservation and insulation, challenging the prevailing wisdom of the supply industry that consumption should ever increase. In this article Geoff Young and Rob Edwards discuss these changes and how we can make use of these Councils.

Consultative Councils

In England and Wales there is a system of Consultative Councils for each area electricity board. These councils mirror the functions of the area boards and do not include generation policy in detail. So these councils are of limited value in opposing nuclear power as such, but may be worth influencing when opposing specific sites.

In 1980 a new initiative came from the South Western Council to mount a detailed investigation into the CEGB's plans for a new nuclear power station in the area. Inevitably much of the response to this badly publicised inquiry came from the supply industry itself. However a reasonably sympathetic hearing has been given to a variety of anti-nuclear activists. Interest was shown in the Somerset Anti-Nuclear Alliance's opinion poll, and the chairperson of the council has attended a conference organised by a local energy group... a dialogue is beginning.

Electricity Consumers' Council

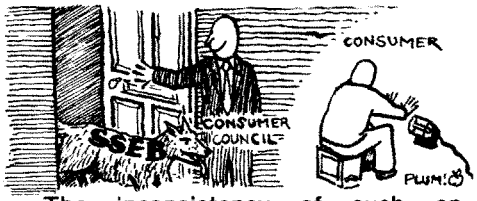
In 1977 the Government set up the Electricity Consumers' Council to represent the interests of consumers in England and Wales at a national level. The last couple of annual reports from the Electricity Consumers' Council shows them to be critical of the nuclear power programme. For instance "Too heavy an emphasis on nuclear power alone would not seem to be in the consumers' short or long term interests, and there does not seem to be a case for rushing into ordering a whole series of new power stations when there are so many uncertainties." To the Monopolies Commission they subjected the CEGB's justification for nuclear power to considerable criticisms and argued against ordering stations to the requirements of the manufacturing industry. They also made positive references to Californian utilities investing very considerable sums of money encouraging their consumers to conserve energy rather than simply expanding their generating capacity.

Scotland

The two Scottish Electricity Consultative Councils (one for the north and for the south) are rather less inclined to criticise the Electricity Boards than their English and Welsh equivalents.

Bill Porter, Secretary of the South of Scotland Consultative Council, has criticised what he sees as the overtly aggressive attitude adopted by the Electricity Consumers' Council. He prefers a 'softly softly' approach and approvingly quotes the fable in which the sun and the wind compete in trying to remove a person's coat — the sun winning by shining after the wind has failed by blowing. "You have to trust us", he says, "so that we can maintain a good relationship with the Board".

Mr. Porter's Council has only issued one public statement this year, and it is typically equivocal. At their meeting in March the Council debated the recent Select Committee Report. After making it clear that there were members of the Council who were critical of the decision to push ahead with the Torness nuclear power station, the statement concluded by firstly welcoming the "firm assurance given by the SSEB" that the commissioning of Torness earlier than necessary would save £400 million and by secondly urging "the Electricity Board to approach the Government with a view to obtaining an equally firm assurance that any shortfalls in the economic assessment on which the case for Torness was promoted would be met by the Government and not by the two million electricity consumers in Scotland".



The inconsistency of such an approach was immediately highlighted by Robin Cook, Labour M.P. for Edinburgh Central, who wrote to the Council saying that he found it "surprising" that they could welcome the SSEB's firm assurance and "simultaneously urge them to approach the Government for a guarantee of compensation should such assurances turn out to be worthless".

Disillusioned

Welfare rights workers and social workers in Scotland who deal daily with those who are experiencing difficulties in paying their electricity bills are also disillusioned over the role of the Consultative Councils. A recent report by the Scottish Fuel Poverty Action Group remarked that the South of Scotland Consultative Council "is, unfortunately, perceived by workers in the field as little more than an apologist for the Board". The Councils are handicapped by the fact that all their information comes from the Electricity Boards and because of their composition "which has remained substantially the same since they were set up after the war, no longer reflects the range and variety of consumer interests": the report accordingly recommends that the membership of the councils should be extended.

Those opposed to nuclear power in Scotland would do well to support this recommendation, and to consider ways of ensuring that the anti-nuclear lobby is adequately represented.

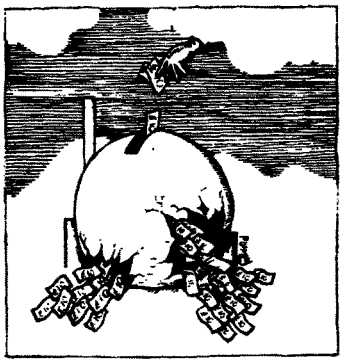
But while the anti-nuclear movement continues to be unrepresented on the Consultative and Consumers' Councils, we must make certain that they know both the strength of the opposition and the reasoning behind it. On a practical level this means supplying them with anti-nuclear and pro alternative literature, as well as lobbying them, inviting them to meetings, and so on. They should also be informed of the consumer campaign.

The Electricity Consumers' Council, in criticising the Government's nuclear power programme, is making a step in the right direction. If the Eastern Consultative Council specially opposes a PWR at the Sizewell public inquiry because it is against the interests of local consumers, an advance will certainly have been made. It is now up to local groups to use these councils and to persuade the Government that we should be represented.

The addresses of local Consultative Councils are displayed in electricity showrooms. The address for the national Electricity Consumer's Council is 119 Marylebone Road, London NW1 and their submission to the Monopolies Commission costs £1. The South of Scotland Consultative Council and the North of Scotland equivalent are both to be found in the bus station in St. Andrew Square, North Clyde Street Lane, Edinburgh.

Great Nuclear Fraud

For years the electricity boards, the government and the nuclear industry have been telling us nuclear power is cheap. However, it has now been convincingly shown that nuclear power is in fact very expensive and that the electricity boards are guilty of a massive public deception. These revelations come at a time when the industry has lost its argument on the need for more power stations. They have therefore lost the final argument used to justify a huge programme of nuclear power.



Electricity from nuclear power is and always has been more expensive than that from equivalent coal fired stations. Magnox nuclear electricity is around 30-40% more expensive, whilst AGR nuclear electricity is around 10-30% more expensive. These conclusions have been reached in a number of independent studies using current cost accounting principles (see box 'Past and Present Costs').

Every year the electricity boards produce cost figures, which they use to 'show' that nuclear power is giving us cheaper electricity, for example:

	Nuclear (Magnox)	Coal
1974/5	0.48	0.74
1978/9	1.02	1.29

(CEGB Annual Reports - units p/kWh)

These figures are used in propaganda material sent to schools and as part of the 'Atoms for Energy' exhibition. The Department of Energy even used them to support its case for nuclear power in evidence to the recent Select Committee on Energy*. They are however, based on a fraudulent use of statistics.

The cost figures rely on historic costs which, according to the Select Committee renders "the resultant figures highly misleading." To be able to compare costs during a period of inflation all figures must be calculated on the basis of today's £, using what has become known as current cost accounting. Professor Jim Jeffery has asserted that failure to do so "lays the CEGB open to the charge of concealing the real cost of nuclear electricity".*

In spite of the growing awareness of the irrelevancy of historic cost figures, the electricity boards have continued to quote them approvingly. For instance, Mr. Roy Berridge, chairperson of the SSEB, said on June 25th this year, "The economic benefit of nuclear power is brought out in the all-in costs of generating electricity: Coal and oil 2.185 pence per unit, nuclear 1.880 pence per unit."

The CEGB "do not accept that criticisms (of the use of historic costs) are valid", but admit that they give no guidance for decisions on future investment. Figures based on current costs **would** of course be an important guide for future investment.

Future Choices

It is no longer necessary to build more power stations in this country according to the electricity boards, as forecasts of future electricity demand have fallen dramatically. Nevertheless, they intend to press ahead with a massive programme of nuclear power stations, a decision that is justified on the grounds it will save money. Indeed, the SSEB claim that by building Torness five years too early they will save £400 million.

The CEGB uses a large computer model of their whole system to reach a similar conclusions (see box on 'Future Costs'). The answers produced by the model depend, however, entirely on the assumptions fed in. For instance future coal prices have to be estimated, as well as the length of time it will take to build nuclear power stations. If they get these figures wrong the economic saving from building unnecessary nuclear power stations can turn into an economic loss. In this respect, the CEGB have been guilty of choosing figures which favour nuclear according to the recent report of the Monopolies Commission*.

The model is tested to see what effect changes in the numerous assumptions will have on the outcome. If the effect is not great then the result can be called robust — it will stand up to slight variations in the assumptions. Both electricity boards claim that their

Past and Present Costs

Electricity costs are derived from a summation of (usually) three separate parts: • Fuel costs — at current prices; • Operation and maintenance costs — at current prices; • Capital charges — at historic prices. Because capital charges are expressed in historic terms (the actual number of £s paid at the time) this part of the sum is smaller than it should be. Expressing the costs in terms of today's prices, by multiplying the historic costs by inflation, allows a proper comparison to be made between coal and nuclear.

Prof. Jeffrey has recalculated CEGB figures in current cost terms*:

	Nuclear (Magnox)	Coal
Historic Costs	1.02	1.29
Current Costs	2.03	1.52

(units p/kWh)

This example also includes an adjustment for load factor — another way in which the electricity boards make nuclear look artificially cheap. Basically, nuclear stations are run more often than coal, because their fuel costs are cheaper (this does not mean that they produce cheaper electricity!) Their load factors are thus higher, about 76% for nuclear and 65% for coal in the above example. If the coal fired stations had sent out electricity for 76% of the time then they would have supplied more units, and the capital cost per unit would thus have been less.

In the above example, Magnox nuclear electricity is 34% more expensive than coal. A similar calculation by the Scottish Consumer Campaign* for Hunterston A, Scotland's Magnox nuclear station, shows nuclear electricity to be 40% more expensive than from coal, oil and gas together. (The latest SSEB Annual Report shows Hunterston A to be producing electricity 6% more expensively than coal fired stations, and this is without adjustments for historical costs and load factor!) Dr. Richard Marshall finds Magnox nuclear electricity to be 31% more expensive*. Friends of the Earth have reported a calculation made in 1972 which showed Magnox nuclear electricity to be 50% more expensive.*

Similar calculations for AGR nuclear electricity show it to be 10% (Duncan Burn*), 27% (Prof. Jeffrey, unpublished result) and 17% (Scottish Consumer Campaign*) more expensive than that from coal.

These figures are based on a number of simplifying assumptions, hence their wide range. They could be made more accurately if the relevant information was available from the electricity boards. So far they have refused all requests for this information.

A number of other hidden costs are not incorporated in the figures for nuclear electricity: **1.** The massive **research and development** costs incurred by the UK Atomic Energy Authority in support of nuclear power, now about £200m a year. **2. Decommissioning costs.** These are supposedly allowed for, but no one can know the eventual cost. **3. Accidents.** Costs of accidents, even small ones, in nuclear power stations can be massive. For instance, repairs to Hunterston B, following the accidental entry of 2000 gallons of seawater into the reactor, cost £15m. To this should be added the extra cost of replacement electricity of £42m from marginal coal and oil plant. But this extra cost is not actually attributed to the price of electricity from Hunterston.

Future Costs

Calculations of the economic effects of building unnecessary nuclear power stations are presented in terms of Net Effective Cost (NEC) figures, in units of £ per KW per annum. A negative figure indicates a saving — the system is cheaper to run and the price of electricity is less — whilst a positive figure indicates an extra cost. The CEGB calculate a basic NEC for nuclear of -£18/KW per annum, ie. cheaper electricity.

The computer model results depend entirely on the assumptions fed in. In theory the model should first be run using central estimates (best guesses) about all the variables to provide a base. It is then tested to see how sensitive it is to changes in the assumptions. This is not in fact how the CEGB set about the task.

Coal Prices. The model is particularly sensitive to assumptions about coal prices. The CEGB assume a price increase of 1½-2% per annum in real terms, but only after a 4.2% per annum rise until 1987/8. These figures compare with a 1% per annum increase since 1975 and furthermore contradict a contract between the CEGB and the National Coal Board which assures that coal prices in the next few years will rise at a rate not greater than inflation (0% per annum increase in real terms).

A reduction of the CEGB's forecast coal price for the year 2000 of only 15% would increase the NEC for nuclear by £21/KW per annum.

Nuclear Fuel Cycle Costs. Over the last 5 years nuclear fuel cycle costs have risen by 50% per annum in real terms and show no signs of levelling off. The electricity boards on the other hand assume an increase of a mere 1-2% per annum from now on. Future costs of reprocessing/glassification/disposal in particular are highly uncertain. The Monopolies Commission "recommends that, until further figures are available ...., a sceptical attitude towards nuclear fuel cycle costs is appropriate".

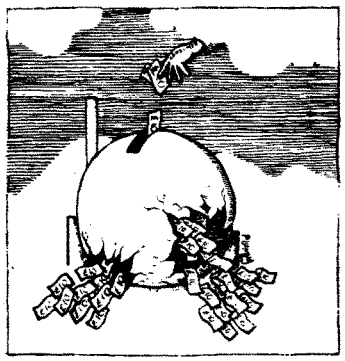
Construction Costs and Time. Here the CEGB are guilty of using 'targets' rather than 'central estimates', because 'publication of a central estimate could have a self fulfilling effect'. "It follows that the construction cost figures used by the CEGB's Planning Department to estimate basic NECs were and are under-estimates not central estimates" (Monopolies Commission).

The target construction time is 6 years, but when the CEGB were asked to produce a more realistic estimate they said 8 years, 4 months. The actual average construction time for the first four English AGRs will be around 13 years, 1 month.

Plant Performance. The NEC figures are especially sensitive to the lifetime rating and the annual average availability. The present AGRs are rated at about 80% of design output. That is they were designed to produce 1320 MW of electricity when running at full power, but in practice will only be able to produce about 1060 MW at full power.

In the 1979/80 Development Review the CEGB assumed a 68% average annual availability for AGRs. This was reduced only a year later to 66%. (Availability is less than 100% because of planned shut downs for maintenance, re-fueling etc., and unplanned shut downs when something goes wrong). It is very difficult at this stage to be certain about lifetime availability of such a complex piece of engineering as a nuclear power station.

On all counts the CEGB can be shown to use underestimates for nuclear and overestimates for coal. When the Monopolies Commission asked the CEGB to run their model with more realistic assumptions, the NEC for nuclear went from -£18/KW per annum to +£18/KW per annum. That is by building unnecessary nuclear power stations the CEGB is likely to increase electricity costs, by around 0.32 p/kWh.



calculations are robust. But the Monopolies Commission thought otherwise, "We are not convinced that the board (CEGB) has demonstrated a robust case".

To reinforce this point the Monopolies Commission asked the CEGB to run its model using a more realistic set of assumptions. The result, not surprisingly, showed that to build unnecessary nuclear power stations would, rather than save money, in fact increase the price of electricity.

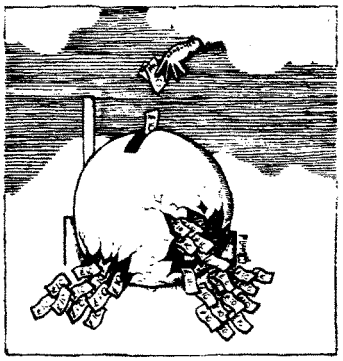
Non-Nuclear Options

The new result suggests in fact that the best option for the future would be to refurbish and extend the life of existing plant. But there is another alternative, not considered by the Monopolies Commission, that could be even cheaper — energy conservation. Indeed, the Select Committee were "dismayed to find that .... the Department of Energy has no idea of whether investing £1,300m in a single nuclear power plant is as cost effective as spending a similar sum to promote energy conservation".

Recent estimates suggest it would cost less than a quarter of the price to save a KW of electricity as to generate a KW. The pacific Gas & Electric Company in America already finds it is cheaper to give free advice on energy conservation, and to provide interest-free loans, than to generate more electricity. As the Scottish Consumer Campaign's new report 'Cheap Electrickery'* points out, there is nothing in the Electricity Acts in this country to prevent electricity boards from investing in insulation in this way. What more sensible course could there be, at a time when industry is crying out for cheaper electricity?

Conclusions

- Nuclear power is not cheaper than coal and never has been.
- The electricity boards are guilty of deceiving the public by the use of historic cost figures. They should immediately produce figures based on current costs.
- The economic case for building unnecessary nuclear power stations is not robust. In fact, to go ahead with the programme of nuclear power stations will almost certainly increase the cost of electricity.
- The electricity boards operate in secrecy.
- There should be an immediate independent investigation of electricity costs, with full and public access to the electricity board's information.
- The Government should produce figures for the cost effectiveness of energy conservation as against electricity production.
- The electricity boards should consider providing free surveys for energy conservation and interest-free loans for energy saving investments, rather than spending money on more power stations.



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Trade Union Campaign

The Trade Unions may well hold the key to the success of the anti-nuclear movement — both in terms of their numbers and their strength. With this in mind the Anti-Nuclear Campaign [ANC] has launched a new initiative to involve them in the nuclear debate. In this article Harold Immanuel of the ANC provides the background for Trade Union involvement.

If we are to be successful in raising the nuclear energy question within the Trade Union movement, then it must be as an issue that directly affects people as workers and trade unionists. Nuclear power is highly capital intensive, and unlike coal, conservation and the alternatives, creates few jobs for each pound invested. This unnecessary industry not only reduces the employment possibilities, but also increases the health and safety hazards, and curtails trade union and employment rights. It is our task to take these arguments into the Trade Union movement, and show that nuclear power is a crucial issue of direct concern to trade unionists.

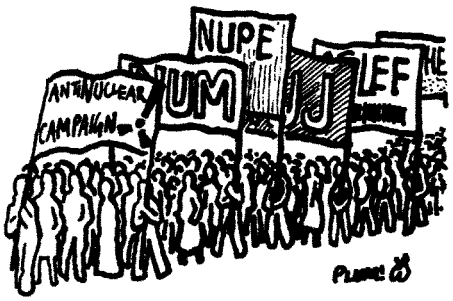
Workers Involved

The miners' interest in the future of the coal industry may be the most obvious such point, but the nuclear power issue is no less relevant for many other groups of workers. Seamen are both bringing in spent fuel from overseas and shipping out waste for dumping at sea. Railwaymen and other transport workers move radioactive materials around the country at all stages of the nuclear fuel cycle. Firemen are supposedly responsible for trying to control a nuclear accident, while health workers are expected to treat the victims. It is not only building workers who have direct interest in the employment prospects offered by the alternatives — local authority workers, for example, have a similar such interest in schemes like district heating. And both teachers in the classroom, and journalists at the newsdesk, find themselves bombarded with public relations packages from the nuclear authorities.

Anti-Nuclear Unions

Although there is not yet support in the TUC for an anti-nuclear policy, ten unions have already supported anti-nuclear motions. But until now, the debate has been an unequal one. For example, unions with workers in nuclear establishments have, perhaps not surprisingly, been prepared to repeat some of the nuclear lobby's mythical claims for nuclear power.

The ANC's Trade Union campaign will play an increasingly important part in reversing that situation. We will, for example, shortly be producing a pamphlet on nuclear power written by active trade unionists. The Trade Union ANC will also help groups of



workers set up anti-nuclear groups within their workplace or union (union rules permitting).

Effort needs to be put into both the formal union structure and into generating awareness and involvement by the membership. For Trade Unions to adopt particular policies, motions, in the form of resolutions, must be submitted. This can easily be done at branch level. However, formal resolutions alone, without active support, remain dead letters. This is why the model resolution is so important. It commits the union branch concerned to both anti-nuclear policy and affiliation to the ANC. A briefing document on this general resolution is available, as well as model resolutions on particular issues — health and safety, waste transport, waste dumping, and PWRs, from the ANC.

Affiliations to the ANC keeps union branches in regular contact with other anti-nuclear unions and, via the Trade Union ANC, draws them into the broader anti-nuclear movement. In this way also, those unions which have already supported anti-nuclear motions can be consolidated. So if your union branch is not anti-nuclear or affiliated to the ANC, then propose that it becomes so at the next meeting.

For further details of the Trade Union ANC, contact Harold Immanuel, ANC National Office, P.O. Box 216, Sheffield S1 1BD. Tel. 0742-754691 [24 hours].

AntiNuclear CAMPAIGN!

Model Resolution

This branch condemns the Government's policy of cutting public spending on all useful services while increasing spending on their 'civil' and military nuclear programmes.

We recognise that:

1. Nuclear power is unnecessary — it creates only one form of energy, electricity, of which there is already excessive over-capacity. Estimates of energy demand, used to justify the nuclear programme, have proved consistently too high.
2. Nuclear reactors produce plutonium for the nuclear weapons programme; and the export of nuclear technology results in the proliferation of nuclear weapons.
3. The nuclear industry takes up much more investment, and creates far less employment, than an energy policy based on coal, conservation and renewable energy sources.
4. The security measures in the industry pose a major threat to trade union rights and civil liberties.
5. The safety risks in the nuclear industry are very far from being resolved as events at Harrisburg, Windscale and failures elsewhere have demonstrated.
6. There is no safe way of either transporting or storing nuclear waste.

We demand a total halt to all nuclear developments from the mining of uranium to the dumping of nuclear waste and the manufacture of nuclear weapons.

We instruct the branch officers to press for an active campaign to inform both members and the public of the economic, biological, social and political dangers of the nuclear programme.

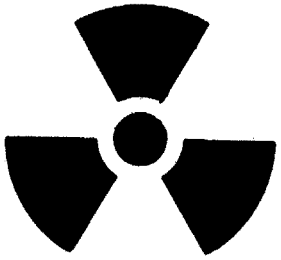
This branch affiliates to the Anti-Nuclear Campaign whose aims are to stop nuclear power, abolish nuclear weapons, reduce energy waste, develop alternative energy programmes and guarantee employment during the changeover.

Unions Which Have Supported Anti Nuclear Motions

ASLEF (Railway Workers)
COHSE (Health Workers)
NGA (Printers)
NUAAW (Agricultural Workers)
NUJ (Journalists)
NUM (Miners)
NUPE* (Public Sector Workers)
SPOE (Post Office Engineers)
UCATT (Construction Workers)
USDAW* (Shop Workers)

* Nationally affiliated to the ANC

What Price Jobs?



There is important new evidence that the effects of radiation have been significantly underestimated in the past. This could have implications for safety standards, and the many claims being submitted on behalf of workers who have died from radiation damage. In this article we discuss the new evidence, and describe the growing number of successful claims against the nuclear industry.

Much of the evidence on the effects of radiation, and the basis of internationally agreed safety standards, comes from studies on the survivors of the Hiroshima and Nagasaki bombings. It is these studies that are now being questioned. The new evidence is based on a recalculation of the doses of radiation received. The research is being done at the Lawrence Livermore Weapons Laboratory and the Oak Ridge National Laboratory in America. It shows that most of the cancers were caused by gamma rays, and not by neutrons as previously thought. Since the effects on human health remains the same, gamma rays must be more toxic than assumed before. As workers are more likely to be exposed to gamma rays than neutrons this new finding is extremely important for safety standards.

In Britain, the nuclear industry is presented to the public as a clean, safe technology, but the records of the industry are not as spotless as they would have us believe. £220,000 has been paid out in compensation in the past four years, but the industry still does not accept liability for cancer deaths in its work force. By settling out of court, they have avoided the embarrassment of being proven guilty of negligence. Recently a major breakthrough came when a Dounreay worker's widow won her right to industrial death benefit after a nineteen year battle.

£220,000 Paid Out

The seven compensation cases to date all involved workers from Windscale — the reprocessing plant in Cumbria. Windscale has a particularly bad safety record. Since the Health and Safety Executive began reporting incidents at nuclear installations in their quarterly reports in 1976, there has been an average of just less than 30 each year at Windscale. About a quarter of these incidents resulted in workers being exposed to levels of radiation in excess of the maximum permissible dose of 5 rems per year.

The first major breakthrough came in 1977 when the widows of Jonathan Troughton and Harry King were awarded a total of £30,500. Their union, the General and Municipal Workers Union, had to fight a series of legal battles with British Nuclear Fuels Limited (BNFL) to gain access to medical and works records. Just before the cases were due to be heard in court, BNFL negotiated an out of court settlement on a full liability basis, but without conceeding liability.

Two years later another two cases were won. That of James Connors was backed by the Association of Government Supervisors. His widow was awarded £28,500 from the Treasury on behalf of the UKAEA. This was because, although earlier in his working life he had worked at Windscale, immediately prior to his death he was working at Winfrith, the UKAEA's research establishment.

The last three cases, those of John Lofthouse, John Simpson and Geoffrey Southward were backed by the GMWU and were settled out of court earlier this year. The case of Lofthouse is unique amongst the seven as he is still alive. His £15,000 payment was for suffering and loss of work caused by cataracts on both eyes, and a kidney tumour. The importance of his payment is that he was exposed to much lower levels of radiation than in the other cases.

Dounreay

Up to this year, radiation cases have centred on Windscale. But last June, days after the latest BNFL settlement, Jeanie Gillen won her 19 year battle to prove that her husband was killed by radiation. Alexander Gillen began work at Dounreay in 1958 — four years later he was dead from myeloid leukaemia. He had worked operating a crane above the reactor core replacing spent fuel rods. According to his chest monitoring badge he accumulated only 2.95 rads over the 3½ years he worked there. At the tribunal the Social Security Commissioner, Douglas Reith, Q.C. questioned whether monitoring badges provide accurate measurements of radiation exposure. He also questioned the 5 rem safety standard, saying "There now seems to be a substantial body of opinion to the effect that the five rems or rads limit is no longer acceptable; that there is really no safety limit as far as exposure to radiation is concerned". The Transport and General Workers Union, who backed Mrs Gillen, is now preparing a civil action to seek compensation from the UKAEA through the Court of sessions.

Since 1954, the UKAEA have faced fifteen compensation claims. At the moment only three cases are being continued. Most of the rest have either been withdrawn or abandoned due to the difficulty in proving that a particular injury or death is directly related to industrial exposure.

Aldermaston

The cases that are being continued involve workers from the Atomic Research Establishment at Aldermaston. In 1978 there was a public uproar when it was discovered that 12 people, including three laundry workers, were contaminated with plutonium. Following this the work force were submitted to full body monitoring, which resulted in 70 claims of contamination being submitted to the Ministry of Defence. The three cases all involve workers who put claims in before they died.

Until the controversy over the toxicity of radiation is resolved it will continue to be difficult to prove that radiation has caused a particular injury. At the inquest into the death of Ken Cummins, one of the Aldermaston workers, an open verdict was given because the court was presented with so much conflicting evidence. If, when a full recalculation of the Hiroshima data is completed, it shows that the basis of the nuclear establishment's evidence is wrong, we might see the end of this controversy, and it may lead the way for better protection of workers. The GMWU, who have played such an important part in the compensation cases are already fighting to reduce the present safety standards from 5 rems to 1 rem/year.

The Cases Where Compensation had been Paid Out

	Awarded	Cause of Death
Jonathan Troughton	£22,500	Cancer of bone marrow
Harry King	£ 8,000	Cataracts and brain tumour
Malcolm Pattison	£67,000	Leukaemia
James Connors	£28,500	Myeloid leukaemia
John Lofthouse*	£15,000	Cataracts and kidney tumour
Geoffrey Southward	£60,000	Myeloid leukaemia
John Simpson	£21,000	Cancer of pancreas

* Still alive.

Appropriate

Geothermal Energy

Geothermal heat is a relatively well-established 'alternative' energy source. Earlier this century, electricity was being generated from such sources in Larderello, Italy, whilst geothermal steam provided space heating in Reykjavik, Iceland. Current world geothermal power capacity is rated at 2,400 MW [compared with a U.K. total capacity of 56,000 MW], and geothermal heat supplies about 100,000 dwellings. However, fossil fuel price rises have spurred development and the amount of geothermal energy used worldwide will grow substantially by 2000. In contrast, U.K. interest in geothermal energy may seem low. This, however, results from the nature and distribution of geothermal resources.

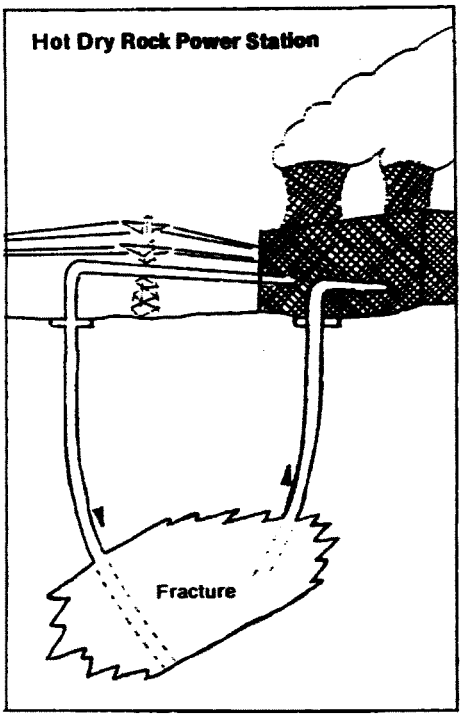
Over the surface of the earth there is a fairly uniform, though small flow of heat from the core. Higher heat flows occur in certain areas due to geological anomalies such as the rise of magmatic material and local concentrations of natural radioactive isotopes. These anomalies produce heat 'deposits' which can be exploited, but since economic extraction rates usually exceed the rate of natural heat flow it is possible to deplete these sources. Hence, geothermal energy is not strictly 'renewable'. However, large amounts of heat are available from geothermal resources which can be grouped into three broad categories; steam fields, hot dry rocks and hot aquifers.

Steam Fields

Steam fields, creating geysers, etc., are an obvious source of heat and were, therefore, first to be exploited commercially. In this resource natural water encounters hot rocks near the surface to produce steam up to 400°C. The steam can be extracted through wells to generate electricity. Geothermal electric schemes are attractive because they provide a high value fuel that can be transmitted efficiently over large distances. This is important since steam fields are often far from centres of population. Unfortunately, steam fields are also restricted to volcanic and seismic areas and are, hence, relatively uncommon. There are no steam fields in the U.K.

Hot Dry Rocks

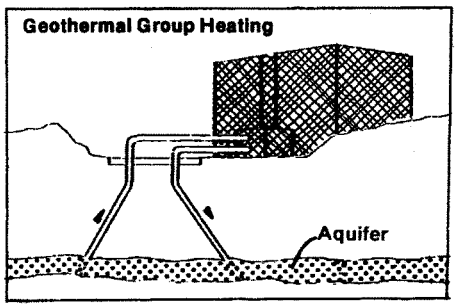
Heat flows and temperatures similar to those experienced in steam fields can still be found virtually anywhere in the world at appropriate depths.



The sources of this energy are hot dry rocks which are usually quite deep — at 4 kilometres or deeper — and at the extreme range of conventional drilling. The hardness of these rocks contributes to drilling costs which can exceed £1m. Additionally, the rocks are not fractured and contain no natural water. Hence artificial fractures must be created to introduce water which can provide steam for electricity generation. Experience with this new technology is being developed in Cornwall at the Camborne School of Mines which recently received £7m from the Department of Energy and E.E.C. for 3 years further research. Hot dry rocks occuring in Cornwall (and Durham) might comprise an equivalent of about 8.000 million tonnes of coal (compared to U.K. coal reserves of 45,000 million tonnes). Current estimates suggests that electricity from such sources might just compete with electricity from conventional fuels. Indeed, hot dry rocks could provide up to 15% of all U.K. electricity but such power stations are not expected to be operating until after 2000.

Hot Aquifers

Hot aquifers could be supplying heat in the U.K. before then, however.



These resources consist of water reservoirs heated up to 100°C by surrounding rocks. The hot water can be pumped to the surface through wells to provide domestic space heating. Economic schemes would probably consist of group heating for blocks of flats as opposed to district heating for housing estates. Much interest is currently focussed on aquifers between 50°C and 80°C at depths from 2 to 4 kilometres. Although resources may exist in a number of regions, the Wessex and Bath/Bristol areas seem the most attractive. Actual development will depend on a combination of favourable geology and suitable local heat demand. This latter aspect is important because geothermal hot water can only be transported economically over short distances — less than about 20 kilometres.

France

The U.K.'s first geothermal heating scheme is presently being considered for Southampton. In contrast with this pace of progress, France is rapidly exploiting hot aquifers with the aim of supplying 500,000 dwellings by 1990. However, the French situation is unusual since geothermal resources were first discovered, luckily under Paris, by oil and gas exploration in the 1950's. This provided France with a good basis of knowledge for present development. The collection of basic geothermal data is now a priority for the U.K. and this activity has attracted about £3m of Government and E.E.C. funds. Successful schemes are expected to produce heat at costs competitive with oil and total resources may be similar to those of hot dry rocks.

Although hot aquifers are receiving most attention now, shallower sources of warm water, a few hundred metres deep and up to 50°C, may prove important in the future. Such resources can be used with heat pumps to provide heat for individual homes, factories and farms, as in the U.S.A. Progress in this particular area will depend on improvements in heat pump technology combined with proper encouragement of small-scale energy production. As with all energy sources, social, environmental and in-

stitutional factors, in addition to technological aspects, will play crucial roles in the development of geothermal energy in the U.K.

Further reading:

"Geothermal Energy" by H.C.H. Armstead, John Wiley & Sons, New York, 1978.

"Geothermal Energy: the case for research in the U.K." by J.D. Garnish, Energy Paper No.9, H.M.S.O., London, 1976.

Jobs From Warmth

A major campaign for combined heat and power/district heating (CHP/DH) schemes was launched by the Newcastle based Trade Union Studies Information Unit in July. Their campaign follows the initiatives taken by the Corporate Trade Union Committee at NEI Parsons and the Power Engineering Industry Trade Union Committee to secure steady employment in the power engineering industry through the production of community heating schemes.

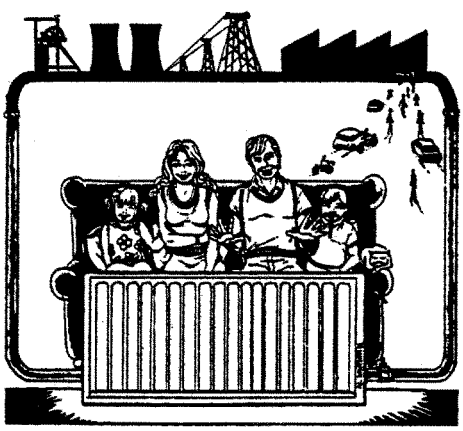
The project's first leaflet called 'Jobs from Warmth' clearly states the benefits from CHP/DH schemes for workers and tenants.

Local studies by Newcastle City Council have shown that whole city heating installation could mean 1,000 jobs for the area over 10 years on local authority dwellings only. This does not include employment related to pipe and insulation manufacture, nor CHP station work or coal supplies.

Together with shop stewards in the power engineering industry, the NE Trade Union Studies Information Unit and the Newcastle Energy Advice Unit have prepared a slide show on CHP which is available free of charge for tenants and trade union meetings.

For further information about the campaign, the slide show, and copies of 'Jobs from Warmth' contact Ken Ternent, TUSIU, Southden, Fernwood Road, Newcastle NE2 1PJ. Tel. 0632-816087.

The Campaign for Combined Heat & Power



Coal Promotion

The details of a £50m scheme to encourage switching from oil to coal fired boilers was announced in Parliament at the end of May. The scheme is designed to promote industrial efficiency and also assist the reduction of the UK's long term dependence on oil. Capital grants up to 25% will be awarded for the conversion or replacement of existing oil fired boilers with coal fired boilers. Applicants must satisfy the Department of Energy that the project would not have gone ahead without assistance under the scheme.

Energy Management, June '81

Oil From Coal

The Government is to aid a pilot plant for making oil from coal. The plant is to be built at Point Ayr in North Wales and will cost the National Coal Board an estimated £33 million, of which £12 million is likely to be made available from the EEC. The Government finance will depend on the NCB finding financial participation from private industry.

Neighbourhood Energy Action

Neighbourhood Energy Action has been set up to stimulate local response to fuel poverty and unemployment. It aims to promote and assist neighbourhood energy projects, and to stimulate job creation through energy conservation and advice work for low income communities. Neighbourhood Energy Action have set up an information centre to provide information and advice for such projects. They produce a regular newsletter covering news of developments at both local and national levels, briefing notes and a home insulation project pack.

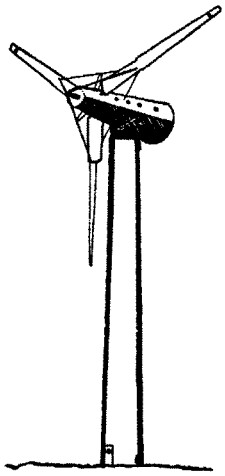
For more information about Neighbourhood Energy Action contact them at 26 Bedford Square, London WC1B 3HU. Tel. 01-636-0632 or 81 Jesmond Road, Newcastle NE2 1NH. Tel. 0632-818297.

Efficiency

Over the last decade the average thermal efficiency of CEGB's power stations that burn fossil fuels has risen from 28.3% to 32.0%. The thermal efficiency of a power station is the ratio of electricity supplied to the grid compared to the heat in the fuel.

Energy Management, June '81

Danish Mills



The Danish Government have presented a plan for the possible construction of 3,000 large windmills. These windmills could produce about 15% of the country's electricity by 1995. The importance of the plan is that it is thought to be the first detailed study by a government that seriously examines the possibility of where such a large number of windmills could be built. The plan took into consideration that heavily populated areas, recreation areas, as well as areas reserved for agriculture and mining are automatically eliminated from consideration. The plan will now go to the relevant regional and local authorities for comment. Afterwards, the planning committee will present their final recommendations, which will form the basis for a final government decision on whether to go ahead with the project.

The windmills used in the study are experimental 'Nibe' windmills. They are three bladed rotor type mills and are 41m high with a span of 40m.

The Danish Government already supports wind energy by giving 30% grants for private windmills. They have compiled a list of 30 government tested approved designs. Despite strong competition among designers, windmills in Denmark are still not cheap. But with the incentive of government grants, about 500 private windmills have been installed, mainly on farms.

New Scientist, 2.7.81 and WISE 2.7.81

Reviews Reviews

Level 7

Level 7, Mordecai Roshwald, Allison and Busby, 1981. £1.95 [plus 30p p&p, SCRAM mail order].

Level 7, a novel by Mordecai Roshwald, was written and first published in the late 1950's, and although topical then, at the height of the CND Ban the Bomb marches, it has been out of print ever since.

It is the story, very readable and fast moving, of Officer X - 127, who is sent to live 4,400 feet underground in the world's deepest nuclear shelter, where he awaits the moment when he must push the buttons which could destroy the world.

The deepest, safest shelter is given to the military, and to the technicians, nurses, teachers, and others who are considered necessary to maintain an underground community, designed to be self sufficient for 500 years. The entrance to the shelter is sealed off. Its inhabitants know that they are down there for life.

For me, the main interest in the early part of the book was in the description of how Level 7, the underground shelter operated; how it was to supply water, air, food, and power for 500 years, remembering that they were preparing for a nuclear war which would leave the surface of the earth useless to them because of radioactive pollution.

Also interesting was to consider the psychological effects of living in such conditions — how such a community would structure itself, and how people would adjust to living in permanent isolation underground.

This was one aspect of the book where I was a little disappointed. I felt it would have been interesting to have delved into more of the possibilities of things going wrong in the social set up of Level 7, and of the different ways in which its inhabitants would have coped, or failed to cope, with their peculiar way of life.

But then this was not the point of the book, as we find out about half way through, when the war happens. The effects of the war and its aftermath, the radioactivity, on those left alive, made compulsive reading for me, with the vivid description of the decline and destruction of these underground shelters.

My main criticisms about the book are of the ways that the characters of Officer X-127, and his fellow officer X-117 develop. I was left unconvinced by the change in X-127's character, and felt that the conflicts and torments that X-117 suffered were treated rather simplistically.

However, these reservations aside, I found it provoking and interesting, and powerful in its description in the second half, of the painful lingering death of a society whose ingenuity and resources had ultimately been turned against itself.

Kathy Challis

Energy From The Waves

Energy from the Waves - 2nd Edition, David Ross, Pergamon Press, 1981. £3.50.

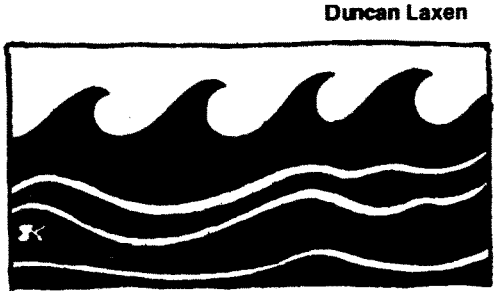
If enthusiasm will provide us with wave power then David Ross' book should certainly encourage the process. The first edition, published in 1979, was widely acclaimed, but it is already out of date — a problem of writing about a fast developing field. Hence the welcome appearance of an updated 2nd edition. In this revised and enlarged edition David Ross has re-written the Introduction and Conclusions and added a new 23 page chapter which describes recent developments. The main body of the book remains nevertheless unaltered.

For those unfamiliar with the first edition, the book provides an excellent introduction to wave energy. In easy to follow language David Ross guides the reader through the technicalities, from how waves form to how to extract the energy from them. The book though is far more than the science and technology of wave energy. It is the 'story' of wave energy including the personalities involved, from Sir Christopher Cockerell, the inventor of the Hovercraft, who was the first to have a 1/10th scale working model, to Steven Salter "the hero of this story", who in the winter of 1973 took up the suggestion of his wife "to solve the energy crisis" — and thus were born Salter's Nodding Ducks, or so the story goes. All this anecdotal detail makes the book a pleasure to read.

The latest additions to the wave energy scene (the second generation devices) are described in the new chapter. Unfortunately much less space is devoted to their description (and no graphics) and I am still not clear exactly how each works. However this sort of detail is unnecessary to understand the politics of wave energy. Here perhaps lies the main strength of the book, and one that has been built upon in the 2nd edition. David Ross' perception of the political forces operating to quell the development of wave energy is acute. To take one example, he highlights the 'all or nothing' way the Government wants to single out and develop only one particular device (and the way things are going it looks more likely to be nothing). He then sets forth the more sensible approach of going ahead on a broad front with a number of devices, each on a smaller not very costly scale.

This book can be recommended as an introduction to the science of wave energy, more so for its analysis of the political forces in operation, and last but not least because it is very readable.

Duncan Laxen



Three Mile Island

Three Mile Island, Mark Stevens, Junction Books, 1981. Hardback £12.50, paperback £4.95.

Mark Stevens was a member of the Public Information Task Force which reported on the role of the media in shaping public perceptions of the accident at TMI. The book successfully combines a journalistic style with much of the material contained in the Report of the Task Force. This produces a very readable and predominantly accurate account of the accident and its immediate aftermath which concentrates on the information flow, or lack of it, between the various bodies responsible for administering the accident, media reporters and the general public.

The combination of styles gives an excellent impression of the degree of confusion which existed between the utility, the Nuclear Regulatory Commission and the State & County emergency services. The book provides some stunning examples of the 'mind set' which ensured that the severity of the accident remained unrecognised for a considerable period of time. The training and experience of both the reactor operators and the NRC officials left them in a position where they could not 'even imagine' that the reactors core had become uncovered. This led to the discounting of many crucial pieces of information. Amongst these were an engineers paper calculation that core temperatures had reached 2,000 degrees and an audible bang and recorded pressure spike which represented a hydrogen explosion in the containment building.

Beyond its detailed account of the initial accident the book follows the major events of the following days, the initial reassurances by the utility, the increasing anger of local authorities as they were not informed of radioactive releases, the existence of a potentially explosive hydrogen bubble in the core itself and the fumblings of the NRC as they tried to gain some control over the situation.

The apparent incompetence of the NRC Commissioners is perhaps one of the most striking points of the book, only one of them had any technical knowledge of nuclear reactors. Another major point which comes across strongly is the total lack of emergency procedures. Whilst commenting on the non-existence of a supply of 'potassium iodate', to protect the public against the uptake of radio iodine by the thyroid gland, and the subsequent rush to produce an adequate supply the author makes one remarkable error. He states that in England potassium iodate is kept in the electric meter boxes of homes near nuclear power plants, the supply being regularly renewed by meter readers! This is the only departure into the realm of myth and hear-say which surrounds the issue of nuclear power and the book is a well rounded effort which will probably be cited in support of both pro and anti-nuclear stances.

For anyone wishing to have a highly alive reconstruction of the unfolding of the accident at T.M.I., and the responses to it, this book is highly recommended.

Ian Welsh

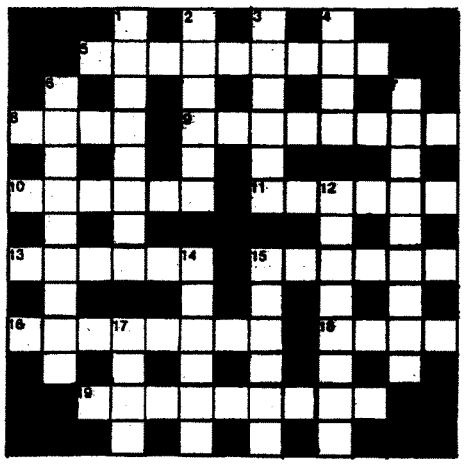
ANTI-NUCLEAR CROSSWORD
Compiled by T. Van Emerits

CLUES ACROSS

5. Quiet Befordshire town, I hesitate to make a deadly metal. (9)
8 & 16. Two women mine uranium in Australia. (4,8)
9. Greater hurt can be produced by putting in extra windows soundly. (4,4)
10. Sounds like late evening hay stack required to dissolve Magnox fuel rods? (6)
11. Amounts of energy expected from Disley. (6)
13. See 2 Down.
15. Scour wrongly ending in the direction of a radioactive emitter. (6)
16. See 8.
18. Verbal communication to spread the word. (4)
19. One drain interrupted to a loose health problem of reactors? (9)

CLUES DOWN

1. Leaning theatrical production? No Nukes Music dosen't use records from it! (4,4)
2 & 13 Across. Indisposable by-product. (6,6)
3. Common information and alternative cereal milled can produce power. (6)
4. See 17.
6. Young salmon loses right at the 19th hole! (3,2,1,3)
7. Beaufort measurement reprocessed? (9)
12. Electrically charged atom follows break-out to form volcanic escape. (8)
14. Science disrupted without direction; but beautiful. (6)
15. The CND magazine is only commonsense! (6)
17. The quiet puma can make an alternative technology system. (4,4)



The first correct answer that is pulled out of a hat on 1st October wins a SCRAM T-shirt. Please state your size with your completed entry!

Solution to June/July

ACROSS. 7. Scram a reactor. 8. Anti-Nuclear. 12. Camber. 14. Reaver. 16. Rabbit. 18. Magnox. 19. Fast Breeder. 23. We fear bad dung.

DOWN. 1. UCLA. 2. Watt. 3. Banner. 4. Fencer. 5. Acre. 6. Tour. 9. Namibia. 10. Advance. 11. Drax. 12. Core. 13. EMI. 15. ETA. 17. Tubers. 18. Maenad. 19. Fuel. 20. SSEB. 21. Dodo.

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Subscriptions to this magazine cost only £4 a year for six issues. If you join SCRAM, membership costs £6 a year which entitles you to a copy of the Energy Bulletin every two months and a member's newsletter twice a year.

We are always short of money, so we must stress that these are minimum subscription rates. If you are able/willing to give more, your donations will be gratefully received. The Standing Order Form below is for those of you who can afford a regular donation by bankers order. We need the financial certainty of regular donations to survive.

Please be generous.

Send off your subscription now to SCRAM, 30 Frederick Street, Edinburgh EH2 2JR.

Quote

According to Sir John Hill, chairperson of BNFL, "If we could feel, see, hear, taste, or smell radiation, it is possible that there would be no anti nuclear movement at all."

BNFL News, July '81

Anti Nuclear Campaign

The Anti Nuclear Campaign have a new and permanent telephone number, 0742-754691, with an answering machine after office hours.

SUBSCRIPTION FORM /SCRAM MEMBERSHIP

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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.

Signed.....Date.....

Scottish Groups

An alliance of Scottish Anti-Nuclear groups (SANG) has been meeting regularly since 1979. There are now over 100 groups in Scotland opposing waste dumping, proposed reactors, plutonium nitrate shipments, uranium mining and the fast breeder reactor. SANG meetings are an opportunity for groups to share information and to support one another on specific campaigns. Until recently, the Scottish Groups Co-ordinator was working from the SCRAM office, passing on relevant information, helping groups to form and offering support where she could. SCRAM would like to take this opportunity of thanking Mary Scott for her invaluable work within SANG.

Information about Scottish groups and SANG meetings can be obtained either from the SCRAM office or Inverness HANG (Highland Anti-Nuclear Group), 1 Attadale Road, Inverness.

Diary

29th August: Ayrshire Rally for Peace. Assemble 10.30 at Dean Park, Kilmarnock. Rally at Howard Park, 12.00 - 3.30 p.m. Dance at Grand Hall, Kilmarnock 7.30 p.m. For more details contact Sybil Moses, 136 Bonnyton Road, Kilmarnock, or phone 0563-43861.

4th September: Scottish Council for Social Services and Scottish Fuel Poverty Action are holding a Seminar on neighbourhood energy schemes. Riddles Court, Lawnmarket. For more details contact Alistair Grimes, 2666, Clyde Street, Glasgow. 041-221-8021.

7th September: SCSS and SFPAG Seminar on neighbourhood energy schemes, St. Anthony's Workspace, Govan, Glasgow. For more details contact Alistair Grimmes as above.

20th September Sponsored Walk along proposed Torness Pylons route, Pencaitland-Stenton, in aid of SCRAM. For details contact Smiling Sun, 37 West Nicolson Street, Edinburgh. 031-667-6203.

26th September: Conference on 'Nuclear Weapons - Nuclear Power, the connections'. With Prof. Rotblatt on the connections; Prof. Lindop on the medical effects; and Dr. Colin Sweet on the economics and politics. 10.15, Co-operative Education Centre, Broad Street, Nottingham. Fee £2.50 from the Safe Energy Group, c/o Environmental Information Centre, 15 Goosegate, Nottingham.

3rd - 4th October: Alternative Nuclex '81 in Basle, Switzerland. For more information contact SANE, 9 Poland Street, London W1.

11th October: Scottish Anti-Nuclear Groups meeting, 10 a.m. 30 Frederick Street, Edinburgh. Minutes from the last meeting are available from Inverness HANG, 1 Attadale Road, Inverness.

24th October: CND National Rally in London, trains leaving Friday 23rd from Glasgow and Edinburgh. For more details contact Scottish CND, 420 Sauchiehall Street, Glasgow.

For some time now, Little Black Rabbit has been wondering how and why the UKAEA chose Dounreay as a site for Britain's first fast breeder reactor. Flicking through some books in the library, she accidently came across a transcript of a speech given by Lord Hinton at Strathclyde University a few years ago. Little Black Rabbit was so appalled at what she had read, that she felt it important to spread the word. The following is an extract from the speech:

> "But why, if we were giving the reactor containment, were we putting it on a remote site? This could only be logical if we assumed that the sphere was not absolutely free from leaks. So we assumed, generously, that there would be 1% leakage from the sphere, and dividing the country around the site into sectors, we counted the number of houses in each sector and calculated the number of inhabitants. To our dismay, this showed that the site did not comply with the safety distances specified by the health physicists. That was easily put right; with the assumption of a 99% containment the site was unsatisfactory, so we assumed, more realistically, a 99.9% containment, and by doing this we established the fact that the site was perfect.... we knew that we had found the right site for the reactor and were quite prepared to adjust what were only guessed figures to support a choice that we knew from experienced judgement was right."

Lord Hinton was Chief Engineer in the Production Division of UKAEA.

Little Black Rabbit
XO