

The Anti Nuclear & Safe Energy Journal

SCRAM



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SHUT IT NOW

Bacteria in Dumps

p3

A~Tests : Britain Guilty

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Energy Efficiency Charter



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The leak of plutonium nitrate vapour from a faulty pump in Windscale's B205 chemical separation plant is the latest in a series of incidents at the plant. This time an 'amber alert' was sounded. The only other amber alert was in September 1973 when 35 workers were contaminated with Ruthenium in a 'blow-back' accident in building B204. The building remains closed to this day.

The Nuclear Installations Inspectorate (NII) published a report of the accident in August 1974 which disclosed that one man was estimated to have up to 40 micro curies of the material in his lungs. Ruthenium is a relatively low energy beta emitter with a short half life. The report stated that no worker 'is expected to suffer any physical harm, but all will continue to be medically supervised.'

The recent accident could be far worse. The plutonium released as a mist is potentially the most dangerous form, and it is a high energy alpha emitter. At the time of going to press the amount released is about 50 micro curies, but this represents the estimate for the atmospheric release; the level in the building could have been, and almost certainly was, much higher.

BNFL has now admitted that at least two workers were contaminated in the leak although earlier statements from the site implied that staff were not affected: there was 'no positive indication that any employee had been contaminated'. Plutonium contamination in the lungs is very serious.

The decision to start up reprocessing operations only 15 hours after the alert was sounded and before the NII report is published must be viewed with concern. The fact that BNFL will be presenting the joint case with the UKAEA in support of their application for a fast reactor fuel reprocessing plant at Dounreay may have something to do with the premature restart: public confidence must not be undermined.

The list of nuclear dump sites were supposed to have been published by now, as was the Environment Select Committee's critical report on reprocessing. This leak could delay the publication still further.

Amber usually means caution; as far as Windscale is concerned it must mean STOP, now!

We apologise for the lesser quality of type in this issue, as we are changing to a new typesetting system and haven't yet got the right daisy wheel.

SCRAM Journal February/March '86

Down In The Dumps

Underground disposal of nuclear waste has been the subject of much controversy: will it contaminate the water table, can it be monitored and retrieved, which rock type should be chosen? But research now indicates another potential problem - bacteria. Here Don Arnott reviews some of the literature and appeals for microbiologists to investigate the issue.

When the great debate about nuclear waste repositories got under way the questions were restricted to matters of physics, chemistry and geology. For example, deep ocean trenches: very deep, very cold, little oxygen, little mixing with other waters. In purely mechanical terms, ideal; or so it was said.

A main theme of my evidence to the Cheviots Public Inquiry in 1980 was that the research base was inadequate for taking irreversible decisions about nuclear waste disposal, and that it was more than likely that important issues remained to be discovered. The first of those issues has now surfaced.

It has emerged that the proposed repositories are inhabited environments. The inhabitants are, mostly, bacteria. It is, consequently, no longer possible to evaluate any of these solely in terms of the non-life sciences.

Insignificant or Horrendous

I shall begin by citing my authority: this issue, though new and doubtless unwelcome for that reason, is something which has to be taken very seriously indeed. The National Environmental Research Council (NERC) has published five weighty reports on the subject, of which I give full details below in the hope of interesting some microbiologists into giving the matter some study.

The reports state that all the microbial groups which they have discovered, and begun to study, 'are relevant to the containment of radioactive waste'. How much so, nobody knows yet: the consequences might be insignificant or horrendous or anything in between - or on the other hand bacteria might have a useful role to play as radioactive waste immobilisers.

What matters is that we have to stop considering repositories as dead environments, and research the consequences of that: all of which merely goes to reinforce our stance against irreversible disposal in the present state of knowledge.



We are familiar with the bacteria which make us ill, frustrate our antibiotics and occasionally break loose with epidemic force. But there are others, of less distinct importance to us; it is nearly true to say that for every set of circumstances on our planet there will be a micro-organism making a vigorous living. These are the ones which concern NERC - and us.

There are bacteria which live on sulphur, producing sulphuric acid in concentrations which forbid all other life; others live on iron, arsenic, or heavy metals. Some micro-organisms require oxygen, others cannot abide it. And (perhaps you are expecting this by now) many of them are enormously resistant to ionising radiation, surviving doses of many thousands of Rem.

On or beneath the surface of land or sea, you can find bacteria. Only one rule do they obey: no water no life, but even this limitation they defy by forming spores which can lie dormant for extremely long periods of time in hope of better things to come.

NERC Reports

The NERC Fluid Processes Group reports listed below fall into two categories: the first two reports are simply annotated bibliographies. The second two are strictly for microbiologists but their proposals for further study seem to support my definition of the situation.

The third paper deals with the clays of Oxfordshire, which have been proposed as backfill material. Large numbers of bacteria were found. Proposals for further study include means of inhibiting or controlling bacterial activity in repository material. The fourth study investigated mines in Cornwall, Derbyshire and Cumbria and found a similar picture. One paragraph from the summary reads:

'All the microbial groups isolated are relevant to the containment of radioactive waste. Sulphate reducing bacteria would be important in the corrosion of steel; sulphur oxidisers. . . would increase the acidity of ground water affecting the integrity of concretes; and microbial groups precipitating metals, eg iron, would retard the movement of released nuclides.'



The fifth report examines the microbiology of the Harwell and Altnabreac boreholes.

More and more one wonders about the rationality of those in charge of waste disposal policy; on the one hand they are hell-bent on getting their underground repositories for irreversible disposal, and on the other they are funding new options for study such as the ENSEC proposal (see SCRAM 48): what for, if the decision is already taken? And now we have a new dimension for study. It doesn't add up.

Bacteria do something which the rest of us are supposed not to do: over the generations (bacteria reproduce every 20 minutes) they inherit acquired characteristics thus responding to environmental change. Recently some have begun to live on plastics. What they will do if we dump radioactive waste amongst them remains to be seen! And until it is seen the only possible solution is to take advantage of the sole weak link which micro-organisms share with the rest of the living world; they cannot do without water. Keep the waste bone-dry - which rules out underground repositories in this wet island - and all they can do is to form inactive spores.

No scare stories: but the issue is new, it is important and it has to be watched.

References

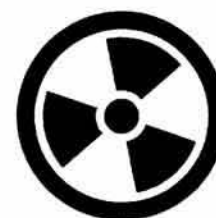
The relevant reports, listed below, are all published by the Fluid Processes Research Group and may be obtained from the British Geological Survey, Keyworth, Nottingham NG12 5GG.

- 1 West, McKinley and Christofi: Geomicrobiology and its Relevance to Nuclear Waste Disposal: an annotated bibliography. ENPU 82-8
- 2 West and Arme: Geomicrobiology and its Relevance to Nuclear Waste Disposal - a further annotated bibliography. FLPU 84-9
- 3 Philp, Christofi and West: The Geomicrobiology of Calcium Monmorillonite (Fuller's Earth). FLPU 84-4
- 4 Christofi, West, Philp and Robbins: The Geomicrobiology of used and Disused Mines in Britain. FLPU 84-5
- 5 Christofi, West, Robbins and McKinley: The Geomicrobiology of the Harwell and Altnabreac boreholes. ENPU 83-4

New regulations governing workers exposure to radiation came into force on the first of January this year. They retain the previous legal limit of an annual whole body dose of 5 rems, as recommended in 1977 by the International Commission on Radiological Protection (ICRP).

One of the main changes under the "Ionising Radiations Regulations 1985" is that the newly appointed radiation protection advisors have now to investigate the cause of any exposure exceeding 30% of legal limits and make recommendations for improvements.

For the first time, radiation doses received internally will be included in the calculation of whole body doses. This is causing problems for BNFL at Sellafield, where high



levels of airborne plutonium have been found in the decanning plant, known as B 30.

Management have so far refused to issue personal air samplers to all the personnel in B 30, although it is known that they measure radio-active uptake far more effectively than the static air samplers in current use. The ICRP have stated that "static samplers, even if located close to the breathing zone of

workers, may not give results which adequately represent the intake of each individual worker", and that the results can be wrong "by a factor which may well lie between 100 and 1000".

The union involved is questioning BNFL's claim that the previous working levels were safe. Backdated "danger money" payments of £1000 are being asked for, along with an extra £40 per week.

Campaign

The Consumer Campaign was set up in 1981 as a Charitable Trust. It represents a way for the person in the street to take direct action against the juggernaut which the electricity and nuclear industry has become.

The Campaign is based on the argument that, in producing electricity by nuclear power, the Electricity Boards are failing in their statutory duties to provide the consumer with the cheapest form of electricity. Nuclear power is more expensive than the alternatives if the capital, interest and R&D costs are taken into account, as has been shown by Colin Sweet and others, and in gentler terms by the Monopolies and Mergers Commission and the House of Commons Energy Select Committee.

Nuclear power has many other inherent problems - environmentally hazardous, unnecessary in demand terms, a threat to civil liberties and a spur to nuclear weapons proliferation - but the Consumer Campaign has chosen to highlight the economic aspects, being an issue which is often ignored.

To take part in the Consumer Campaign you withhold 11% of your electricity bill (11% is a symbolic figure which represents the proportion of nuclear power generation in Britain when the Trust was set up in 1981). The remaining portion is paid to the Electricity Board with a covering letter explaining the reasons for withholding. The withheld portion is paid into the Trust fund

and is invested; any interest or donations are used to help the development of appropriate technology.

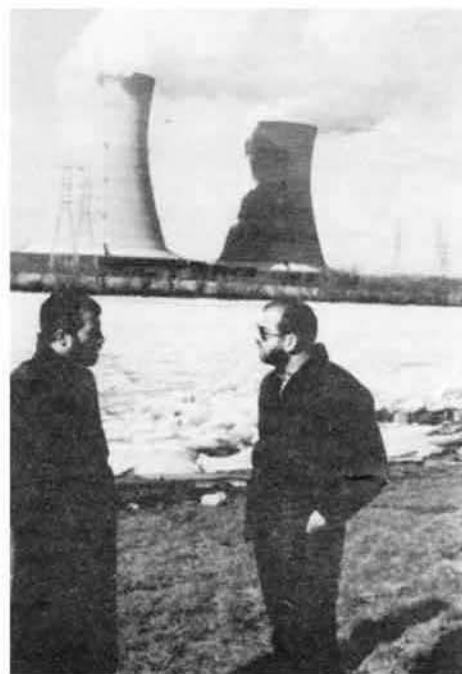
The operation of the Trust fund gives the withholders some legal protection although it is up to the individual how far the protest will go; some people pay up after receiving a disconnection notice and others have even gone the whole way to disconnection and taken legal action.

The theoretical aim of the Trust is to hold the money until such time as the Electricity Boards stop using and promoting nuclear power and begin serious consideration to the alternatives.

Although it has been going since 1981, and there are now 14 local groups, the Consumer Campaign is still a small force. We are currently making a determined effort to attract more withholders as only a mass protest will have sufficient impact on the huge and faceless organisations which control our power supplies.

Contact Consumer Campaign National Coordinators, c/o Anti-Nuclear Campaign Office, PO Box 216, Sheffield S1 1BD.

Druridge

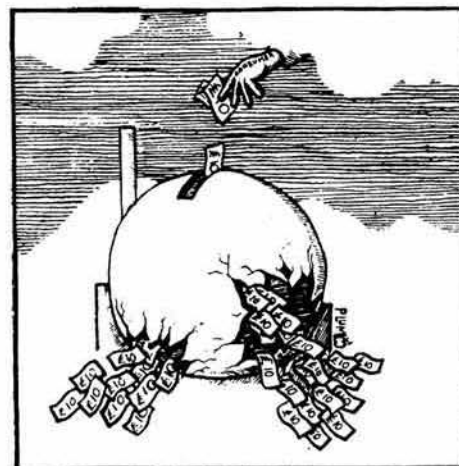


Druridge Bay Campaigner Martin Spence of Newcastle upon Tyne spent his winter holiday in America. He visited Harrisburg, Pennsylvania - the site of the accident at the Three Mile Island Pressurised Water Reactor in March 1979.

Martin is pictured here (left) with Eric Epstein, a worker with Three Mile Island Alert, a citizen protest group. The frozen Susquehanna River runs between the island nuclear site and surrounding farmland.

Whereas Unit 2 Reactor (the one which had the accident) is totally ruined and highly radioactive, Unit 1 was restarted on 8 January this year. The restart was approved by the US Nuclear Regulatory Commission, and upheld by the Supreme Court, despite efforts of local government opposition.

The Druridge Bay Campaign has established contact with Three Mile Island Alert, and have asked them to become their twin campaign.



A giant xmas cracker was pulled outside the Department of the Environment on 17 December by representatives of four areas likely to be affected by nuclear dumping proposals. Inside the cracker were four symbolic nuclear waste barrels.

Each barrel contained a message of opposition addressed to William Waldegrave, the Minister who was at that time deciding which sites to choose as dumping grounds for the nation's nuclear waste. Each barrel represented the 365,000m³ of nuclear waste which would be dumped in a national shallow waste burial site.

Four councillors and four local community representatives helped to pull the cracker. They represented the counties of Bedfordshire, Buckinghamshire, Humberside and Oxfordshire.

Three of the four county councils likely to be affected already oppose the dump proposals strongly. Oxfordshire formally considers the matter early this year, but the local Parish Council at Arncott has decided to oppose dumping plans now.

Each area has been under the threat of dumping for many months as the DoE has progressively delayed an announcement of the sites since May 1985. The councillors present were anxious that the Minister should make his announcement soon in order to allay fears and anxiety in their areas.

Stewart Boyle, Friends of the Earth's Energy Campaigner, said,



'This is the first time that representatives of the four affected dumping areas have joined together in opposition to the waste dumping proposals. William Waldegrave might

be tempted to play one local community off against another, but this approach will serve only to unite the public's opposition to his plans.'

Luxembourg

Luxembourg's first nuclear power station is expected to begin electricity production in September this year. The station is at Cattenom on the Moselle river which forms the natural border between Luxembourg and West Germany, and is to consist of four Pressurised Water Reactors of 1300MW capacity each. Work started on the plant in April 1978 and it is to be managed by Electricite de France (EdF).

The cooling water will come from the Moselle at a rate of 9 m³/s and will be fed from the reactors into the Mirgenbach artificial storage lake for initial cooling before being pumped up the four 165m high cooling towers. In the towers 3m³/s will evaporate and the remaining 6m³/s will be returned to the river. In hot summers this could result in serious thermal pollution because the flow rate of the Moselle can drop to as low as only 10m³/s.

Regulations governing radioactive and thermal discharges are incorporated in a Luxembourg/France Convention. The Convention seeks to limit the maximum temperature of the river to 28°C which, despite the fact that it will be seldom reached even during hot summers, independent observers believe is set too high. Also the river is already polluted and the Treaty does not consider chemical discharges. The nuclear

plant is not allowed to raise the river temperature by more than 1.5°C, and water volume depleted by the cooling towers must be replaced from the storage lake should the river's flow fall below 26m³/s.

The French government would like the liquid radioactive discharge level to be set at 65 curies/year but the German and Luxembourg limits are only 12Ci/year. Gaseous discharge levels are also felt to be too high: in general French law permits 17 times more discharges to the atmosphere than German law.

The Treaty, which has not yet been ratified, does not allow Luxembourg or Germany to establish radioactivity monitoring systems, and also prohibits them controlling water temperature and radioactive discharges from the nuclear plant. Monitoring equipment will be installed in the countries away from the site but they will be of little use in the event of an accident at the plant because there cannot be an early warning of approaching gas clouds.

The Commission which supervises the Moselle Navigation Convention is examining the proposals. A court of arbitration, comprising three members, will decide in the case of any disagreement between the countries involved. A public consultation process was completed in December.



Fusion

An agreement has recently been signed which will unite the fusion research programmes of Europe, the US and Japan. This follows the agreement between the US and the USSR made during the recent Reagan/Gorbachov summit.

The concord calls for collaboration between the US Tokamak Fusion Test Reactor at Princeton, New Jersey, the Joint European Torus at Culham and the JT-60 at Naka-machi in Japan.

Each system, although based on Tokamak, has different objectives and they are all vying with each other for the lead in the technology. The three teams intend to exchange information and scientists.

New Scientist, 30.1.86

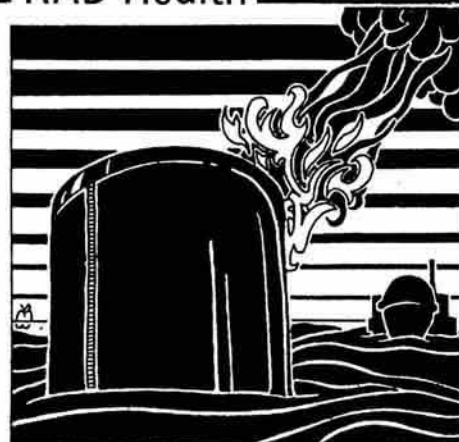


In the last journal we carried an article about an anti-radiation pill, which saturates the thyroid gland with iodine, effectively blocking any further intake of the lethal radioiodine-131. The pill, which to be effective must be taken before exposures, was used for the

first time in the UK on 29 November 1985, following a gas leak at the Hinkley B reactor.

The leak was the third and most serious at Hinkley in a month, and the second involving the cooling system. Eight tonnes of Carbon Dioxide at 300°C escaped from the reactor through a one inch hole, at 261 pound per square inch. The hole was caused by a pressure build up near a gas circulator. This blew out an unbolted spindle when a cover plate was removed.

The CEBG claim that nausea and vomiting which followed the release was confined to those who took the pills on an empty stomach. Local reports refute this, stating that people living downwind of the site experienced nausea, and even vomiting following the accidents, and they had not been given the pills or even knew of the accident at the time.



Staff shortages at the Nuclear Installations Inspectorate (NII) are threatening the safety of Britain's aging Magnox reactors, already overstretched during the miners strike.

The already depleted NII are being transferred from London to Bootle, Merseyside, a move which the staff claim will necessitate an extra 10-15 inspectors to compensate for increased travel time.

Five Magnox reactors are currently waiting for their 20 year safety reviews, with several more due this year. Recent accidents at two of these reactors underline the dangers of the Government's policy not to bring the NII up to full strength. The first accident was at the Trawsfynydd station in Wales. A fire broke out in a turbine hall, when an oil lead broke, damaging the rotar blading and shrouding of the turbine. The second accident was at the Sizewell A reactor, where half a tonne of contaminated carbon dioxide leaked from a faulty pipe. The fire in Trawsfynydd reactor highlights the obsolescence of parts of the station, although it is supposed to stay on line until 1995. (See SCRAM 51).

Judas

Shadow environment spokesman Jack Cunningham MP has broken Labour Party ranks over the issue of nuclear power. Cunningham chose the pages of the BNFL employee newspaper, BNFL news, to attack the Labour party conference decision to oppose the civil nuclear programme, saying that he did not expect the decision to be included in the next manifesto.

As reported in the last journal, the motion which called for "a halt to the nuclear power programme and a phasing out of existing plants..." did not receive the necessary two thirds majority to make it party policy.

Cunningham told BNFL News: "The Labour Party is in the business of looking for structures to create jobs and investments in Britain. It is not interested in political



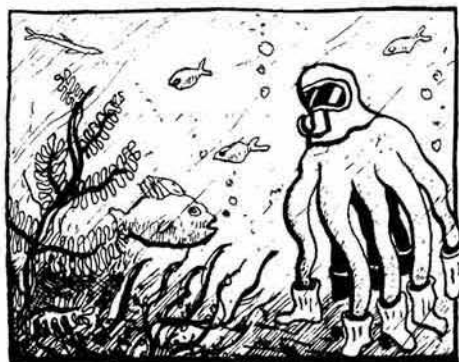
decisions to shut whole industries down"

Cunningham's stand on nuclear power is seen by some groups as being incompatible with his position in the shadow cabinet. In the next election he will defend an 1800 majority at his Copeland constituency which includes the Sellafield complex.

Waste

Algae may be capable of extracting uranium from waste water in uranium mills. However the water must be slightly acidic for the extraction to work, and uranium mill waste water is alkaline.

The secret, apparently, is to



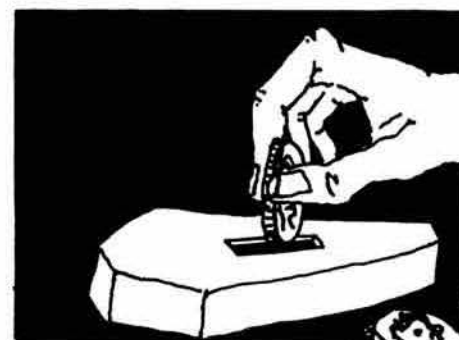
add positive ions to the water so the negative bicarbonate ions in the water will combine with them in preference to the uranium ions; the algae will then attract the uranium.

This potential solution for cleaning up waterways contaminated by uranium, and other heavy metals, has been discovered by a team of scientists working at New Mexico State University.

The group has also discovered that the algae could be used to recover gold. Adding such chemicals as cyanide and thiourea removes the gold, but if left in the algae the organisms convert the ions to neutral metal; the research team suggests that this trait may play a part in the formation of natural gold deposits.

New Scientist, 16.1.86

BNFL



British Nuclear Fuels workers no longer have to die to receive compensation for cancers that could have been caused by radiation. The company has agreed to extend its offers of compensation.

More than £200,000 has so far been paid out in compensation under a four-year-old scheme; £120,000 was paid to the relatives of a dead former worker in the largest single payment to date.

New Scientist, 16.1.86

The Scandinavian governments of Denmark, Finland, Norway and Sweden are calling for more information from the British government over the Dounreay proposals. They are concerned about threats to their fishing interests as well as pollution of their coastlines.

The governments will reconsider the matter once a Norwegian request for more information has been answered by Britain. The Norwegians have said that those West Europeans who wish to dispose of nuclear waste should resite the plant where pollution will affect their own coastlines, not those of third party countries.

Conference

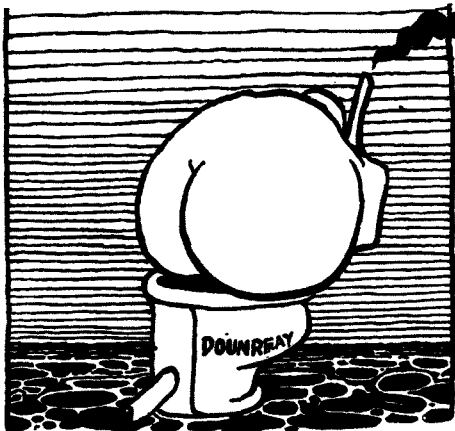
The conference of Peripheral Maritime Regions of the EEC, held in Strasbourg in September, passed a resolution demanding that when industries linked with chemical or nuclear activities are set up along coastlines it is necessary to ensure that the disposal of waste is guaranteed satisfactorily and that no polluting waste must be released into the sea.

Under new regulations Dounreay is responsible for obtaining consent from the River Purification Board to discharge its daily 900 cubic metres of chemical effluent into the sea. Rad waste is controlled by the Secretary of State for Scotland.

Fears have been expressed that both nuclear and chemical waste will effect Ross and Cromarty District Council's intentions to exploit the mussel beds in the Dornoch Firth - not to mention the expanding fish farming industry.

What National Interest?

The international significance of Dounreay is inherent in its proposed role in the European Fast Breeder programme. Despite this, claims that the expansion is of 'national or regional importance' were rejected by the Government when Orkney and Shetland Liberal MP Jim Wallace moved an early day motion on 14 Jan 1986 to expand the terms of reference of the planning inquiry by establishing a planning inquiry commission.



A commission could widen the remit of the inquiry to include such matters as energy policy and safety. Speaking to his motion in the Commons, Mr Wallace argued that: 'The proposals form part of a joint European collaboration project, the terms and implications of which have never been discussed by this house.'

The motion was not passed, being rejected by the Government because 'the purpose of the inquiry is to consider the simple question of whether planning consent should, or should not be given for the proposed development. Simple?'

Although rail links and port facilities do not form part of the planning application, the inquiry Reporter, Mr Bell, has decided that as both are essential to the operation of Dounreay, he will have to be 'satisfied that such facilities are broadly acceptable in local planning terms.' He has set the deadline of 28 February for the UKAEA to produce and justify this evidence.

Ports

Following several 'misunderstandings' over deadlines set, the UKAEA has at last provided a shortlist of their preferred ports, namely Scrabster and three ports on the Cromarty Firth (Alness, Invergordon and Nigg). The UKAEA do not however wish to make any firm commitment to a specific port; they will lead evidence on their general requirements for a suitable port with reference to existing ports such as Barrow.

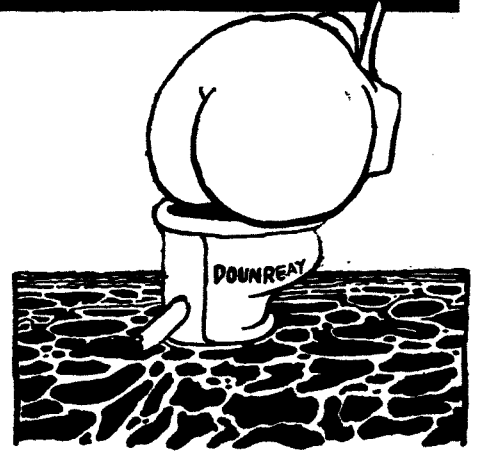
The choice of a particular port is of vital importance to the objectors' case, because Highland Regional Council has stated that their backing for the Dounreay expansion is on the understanding that a Caithness port such as Scrabster or Wick would be preferable, particularly because of considerable local opposition in Invergordon.

Equally important is Ross and Cromarty District Council's vote not to allow Invergordon to be used as a nuclear port. This decision means that they may oppose any future proposals and formally object to any planning applications submitted for transport through Invergordon.

Despite the efforts of the Reporter, the UKAEA have continued to avoid the whole issue of transport. As they say: 'we don't want to make a decision about the ports until the 1990's. . . who knows what the situation will be then?' It is after all only 'hypothetical' that the channel tunnel could be used!

Health and Safety

The annual reports of the Health & Safety Sub-Committee, the 1982 text



of which was leaked to Orkney CADE last year, were eventually put on show as productions for the inquiry on 31 January.

When objectors first asked for these reports they were told by T.D. McRoberts (senior information officer at Dounreay) that 'as they are management reports . . . not for the public . . . I cannot accede to your request'.

However, when the reports were lodged with the Reporter Mr Davies, the UKAEA's inquiry team leader, said that it was nonsense to suggest that these reports were being kept secret, and he added: 'What we haven't done is to issue copies to people and groups who have already demonstrated that they can and will use such reports to grossly mislead the public.'

So, who is correct: Mr McRoberts or Mr Davies? Or is there more than one version of these reports, and did Mr McRoberts think that we had been leaked a different one?

Also, it must be said, the Reports eventually released had had the building numbers deleted by the UKAEA Risley Declassification Officer.

This has effectively restricted our ability to compare trends in particular areas of the plant.

Trial

Dounreay's internal security system was said to be 'full of holes' and 'in need of review' during a trial in December in which a Dounreay worker was convicted of stealing £3,200 worth of equipment from the plant.

Thurso Town Hall is to be spruced up for the inquiry with improved heating, new curtains and double glazing. The old Co-op building in Thurso is to become the UKAEA/BNFL H.Q. for the inquiry; the site was previously designated for much-needed housing.

Closed circuit TV is a possibility for the inquiry, if there are not enough ring-side seats, according to the local district council. But one group who definitely will not be getting a look in is the local Play Group, who will have to be rehoused for the duration of the inquiry. Suggestions that they could be accommodated at the old co-op have yet to be answered.

Nuclear Law Suit

In October last year a Malaysian High Court granted an injunction against the Asian Rare Earth company to stop them dumping highly toxic and radioactive wastes near a village. This report, by Sahabat Alam Malaysia (Friends of the Earth Malaysia) describes this milestone in environmental law.

On 15 October 1985 eight residents of Kampung Baru Bukit Merah obtained an injunction in the Ipoh High Court against the Asian Rare Earth (ARE) factory, restraining it from producing, storing and keeping radioactive wastes in the vicinity of the village. The High Court ordered the factory to take immediate steps for the removal and proper disposal of all radioactive waste, failing which it may have to close the factory.

Controversy

This decision ends a two year controversy which arose when the people of Papan learnt in November 1983, that their town had become the unfortunate area chosen for a dump site for the radioactive waste products of ARE factory. The case is unique in that it is the first time a radioactive waste issue has been brought to court.

Six years ago, ARE built a \$2.7 million factory in Lahat, a small town 45 kms from Ipoh. Monazite, a substance found in tin tailings, is processed at the factory to produce Yttrium, a valuable element used in industry. However the process produces a radioactive by-product, thorium hydroxide, as part of the factory's waste, which has a half life of billions of years. The thorium waste was to be stored in specially constructed trenches.

When construction began on the trenches for storing the waste, the Minister of the Environment emphasised that it would be perfectly safe to store it in the trenches and that they would be built according to international specifications. However SAM (Sahabat Alam Malaysia) made a visit to the site and discovered that the trenches were not in accordance with specifications, several cracks were seen and the con-

struction material was not concrete but a mixture used for plastering walls.

The Papan residents formed the Papan Residents Action Committee. They were justifiably concerned for their health and safety and the lives of future generations.

Representations to the Ministry of Health and the Ministry of Environment culminated in protests and demonstrations. On June 5 1985, despite the protests, the Prime Minister announced that the government would go ahead with the construction of the dump site.

However on 21 January 1985, it was announced that the government has found an alternative site for



the storage of the radioactive waste. The new site was situated 3.2 km from Menglembu.

The residents were not satisfied as the proposed dumpsite was still potentially threatening. They claimed that the ARE factory posed a further threat to the residents nearby.

On 2 February 1985, 8 residents of Bukit Merah, filed a writ of summons at the Ipoh High Court registry. On 3 March 1985 they filed legal papers asking the Ipoh High Court to declare that ARE is not entitled to produce and keep the radioactive wastes upon their land and adjoining lands; and to restrain ARE from producing, storing and keeping the radioactive wastes on either ARE or other lands.

The residents claim that the factory produces a significant amount of wastes as a result of processing the monazite. They alleged that the wastes were being stored in drums, plastic bags or dumped loosely. The wastes are thorium hydroxide in the form of wet cakes, barium radium sulphate and lead sulphate sludge.



The residents also claimed that the wastes are dangerous in that internal or external exposure can cause in the long term, cancer, leukaemia and genetic injury and death in humans and animals.

Professor Ichikawa

One of the residents said that he saw ARE workers dumping heaps of thorium waste into a pond adjoining ARE's factory.

In their affidavit, the residents cited the findings of Prof. Sadao Ichikawa of Saitama University in Japan, who was invited by the Bukit Merah residents to look into the problem. He reported that high radiation levels exceeding the 500mrem/yr ICRP (International Commission on Radiological Protection) dose limit for the general public were found at the farm adjacent to the dumping site and in the yard of the sawmill next to the ARE plant.

Prof. Ichikawa also pointed out that, 'all the above findings indicate that the temporary thorium waste dumping by and the operation of the [ARE] plant are obviously hazardous to those people who live or work daily around the temporary dumping site and the ARE plant. The present situation also seems hazardous for inhabitants living in the nearby housing areas if we consider the long term effects'.

It is therefore encouraging to know of the Ipoh High Court's decision to grant the Bukit Merah residents an injunction against ARE, restraining it from producing, storing and keeping radioactive wastes in the vicinity of the village. Malaysia's pioneer environmental law suit is a victory for its citizens.

But it must not be forgotten that the citizens of Papan and Bukit Merah were not consulted as to the dumping of the waste. It is hoped that this case will ensure that the people of Malaysia will be consulted in all future decisions that may have serious repercussions on their lives.



VDU's & Health

With the accelerating introduction of microchip technology into the working environment some researchers are becoming aware of possible health hazards. Following on from his series of articles on radiation and health, Tony Webb now examines the ghosts behind the screen.

Ask any worker who has had the boss dump a Visual Display Unit (VDU) on the desk in place of the typewriter and s/he (it's usually a woman) will tell you it looks good, it makes you feel important - working on the computer - it feels good for a couple of days, and then it starts to get to you that maybe you've been had.

Firstly, there are usually fewer workers around than before. New technology is after all 'labour saving' and unemployment for some is the price of this 'progress'. In addition the remaining workers begin to suffer regular chronic and sometimes acute discomfort, and frequently debilitating pain:

- * eyestrain, visual disorientation, blurring of vision and colours, and soreness, watering and 'grittiness' of the eye;
 - * headaches and backaches, pains in the neck, shoulders, arms, wrists and hands - sometimes leading to acute inflammation of tendons (tenosynovitis) and other 'repetitive strain' injuries;
 - * changes of mood, irritability, depression, lethargy, fatigue;
 - * stress, high blood pressure, heart disease, indigestion and bowel problems;
- And perhaps most worrying of all:
- * an increased risk of abnormal pregnancy outcome - miscarriage, stillbirth, and birth defects in live born children.

The visual, muscular and stress hazards are undisputed. The reproductive effects are more controversial. Since adverse outcomes occur in 15% of pregnancies anyway it is hard to be certain that particular cases are examples of increased risk. Nevertheless, too many 'clusters' of such cases have been reported for the possibility to be ignored. Such studies as have been done have reinforced the concern. It can no longer be claimed that VDUs are not harmful. Posture, stress and radiation; all associated with VDU work; each is known to be capable of causing such defects.

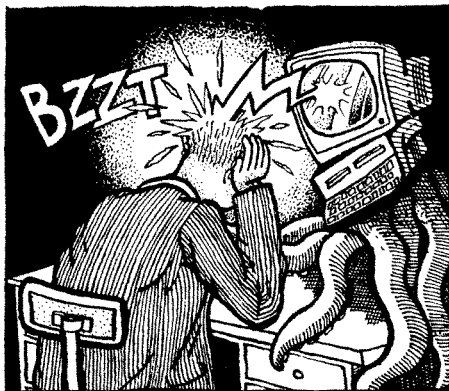
Impartial

This is not just a women's problem. Men experience all the physical problems of VDU work. They are also more vulnerable to reduced fertility and long term genetic damage. These are certainly possible if there are pregnancy problems.

None of this health damage is

necessary. Many of the problems have obvious causes in bad lighting, office layout, furniture design or the way the jobs are structured. The worst health problems are regularly reported among those working long hours and doing monotonous repetitive work. Simply providing adjustable seating, desks, lighting and flexibility in work programmes would alleviate many of the symptoms.

A Canadian study showed a dramatic increase in the reporting of problems when workers were expected to do more than 4 hours a day or more than one to one and a half hours without a break on the VDU. Radiation shielding of VDUs is equally simple and cheap. A number of employers already concede the right of workers to transfer to other work during pregnancy.



In an attempt to establish such common sense controls on the use of the technology a VDU Workers Rights Campaign was recently launched to demand legislation that will:

- * Limit work with a VDU to four hours within any working day. And further, limit the maximum period of continuous VDU work to one hour to be followed by a 15 minute break away from the unit;
- * Specify design requirements for VDU manufacture, and VDU workstation design and layout to minimise stress on vision, posture and efficiency;
- * Require compulsory shielding of all VDUs to eliminate electromagnetic radiation emissions;
- * Establish the right of VDU workers to transfer to other work when planning to start or add to their family. (1)

Fair enough! VDUs are a hazard - why is this important to CND? Could it be that the reluctance to undertake studies on workers' health and especially the genetic effects of VDUs is related to military developments?

The military have shielded their VDU's for years - to protect the equipment and the data stored in them. The military have however consistently whitewashed any suggestion that non-ionising radiation; microwaves, radar, radiosignals, and low frequency transmissions, could have any health effects on military personnel or the population. (2) What have they to hide?

Problems?

How is it that a consultant to IBM, having reviewed the available data from Eastern European as well as western scientists, concluded that health problems from low frequency radiation could not be ruled out. (2)

It is clear that there is more than just money here; even with the millions of VDU's that might need shielding if they admitted a problem, VDUs emit radiation particularly in what are known as the VLF (very low frequency) and ELF (extra low frequency) bands. The military propose to begin construction of an ELF transmitter in the Glengarry Forest in Scotland (modelled on the SEAFARER system in Upper Wisconsin/Northern Michigan in the USA) to enable communications with TRIDENT submarines lying deep submerged in the oceans. (3) Other low frequency signals are already used for military communications.

There is in fact a lot of scientific evidence for health damage from such frequencies including:

- * changes in blood that are usually associated with stress and heart disease;
- * reduced ability to perform mental tasks;
- * birth abnormalities and brain damage in animals;
- * leukaemia and cancer in exposed children;
- * birth defects in children of people exposed. (4)

As with other aspects of our work with trades unions there are particular connections between our concerns and workplace health and safety issues. In this case the links between the issues are clear. Office workers need to oppose Trident and the role of the military in suppressing research into health problems created by military communications as much as CND/Anti-Nuclear activists need to demand rights for office workers using new technology.

References and Reading

- 1 The VDU Workers Rights Campaign, c/o City Centre, 32 Featherstone Street, London EC1.
- 2 The Zapping of America, Paul Brodeur, Norton N.Y. 1977.
- 3 New Scientist, 4th July 1985.
- 4 Terminal Shock - The Health Hazards of VDU's. Bob DeMatteo, NC Press 1985 (Available from Turnaround Distributors UK).

BP & Roxby Downs

The announcement on 8 December to go ahead with the Roxby Downs uranium mine in South Australia has angered environmentalists and the Aboriginal land rights movement. This article, by Sigrid Shayer, identifies the reasons for opposing the development.

The Olympic Dam mining project at Roxby Downs in South Australia is a joint venture between the Western Mining Corporation (WMC), which owns 51%, and BP Australia (49%) and was initially proposed to be the world's largest uranium mine. It is situated 520km north of Adelaide on traditional Aboriginal land. A loophole in the Australian Labour Government's policy of phasing out uranium mining was exploited to achieve the necessary support: the uranium to be extracted is incidental to the main purpose of mining the huge reserves of gold and copper.

However, because the world prices for the minerals are so low the total annual production has been reduced to less than a quarter of the original projection: 1.5m tonnes of ore will be mined, compared with 6.5m tonnes as initially proposed. 2,000 tonnes of uranium and 55,000 tonnes of copper will be produced annually from one million tonnes of copper-uranium ore, and up to 90,000 ounces of gold will be produced from 500,000 tonnes of ore.

The project will cost up to

A\$600m (£300m) for the first stage and represents 2,000 construction and 1,000 permanent jobs in the region (9,000 growing to 30,000 was the expected number when the project was first considered in 1975). BP Australia has spent A\$150m on exploration and development and the South Australia state government is to put up A\$50m for infrastructure - roads, water and services, a hospital, a school and other community facilities - meaning that the taxpayer will have to pay nearly A\$13m per year. It has been suggested that A\$13m spent on other industries in South Australia could create ten times as many jobs. Construction is expected to begin early this year with the first copper and uranium being produced in 1988.

Sacred Sites Desecrated

The Roxby Downs development has created widespread protests over the past three years from the peace, women's, land rights and environmental movements as well as from the churches and the trade unions.

The land is traditionally cared for by the Kokotha people who were moved off their land in the 1950's to make way for the British Woomera rocket testing range and for the testing of British nuclear bombs at Maralinga. The Kokotha have already been affected by the fall out from those tests and don't want this mine to add to the radioactive contamination. They are struggling to achieve land rights recognition and compensation for the destruction already caused to their sacred sites by the developers.

An Environmental Impact Statement presented by the 'joint venturers' (WMC and BP) to the South Australia state government, and passed in June 1983, made only a cursory attempt to locate sites of significance to the Kokotha and an independent anthropological study has been virtually ignored; only the recommendation to set up a liaison committee was accepted, and that has not yet met. Of the fifty sacred sites identified, ten have already been destroyed: the main development shaft runs through a very important sacred site, and the airstrip is built on the ancestral burial ground.

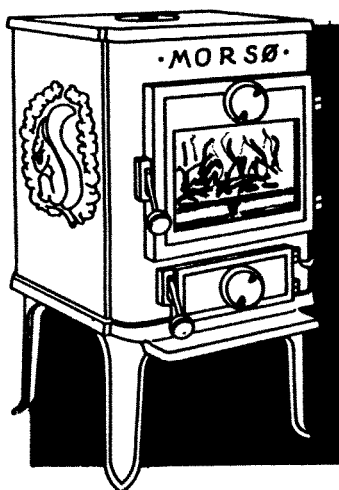
The current national land rights legislation, still under discussion, has removed the power from Aboriginal communities to veto mining claims on their land, due to pressure from the mining lobby: a WMC director has publicly stated that land rights are 'anti development'. Following an occupation of a sacred area called Cane Grass Swamp to prevent its destruction to make way for a road to the mine, the Kokotha have demanded compensation from WMC/BP for sites already destroyed so that they can employ their own anthropologists and lawyers to sort out their land rights.

Ecological Threat

The threat to the ecology of the region is enormous. The plan is to pump 33 million litres of water per day to the mine from the Great Artesian Basin, which threatens to deplete water supplies to farms and communities around the edges of central Australia and to completely destroy unique oases sacred to Aboriginal tribes and of great concern to ecologists.

One fear is the hazard caused by the 'tailings' - a slurry of water and pulverised rock left over after extraction of the mineral - as they lie in a huge dam. The dam will cover an area up to four square kilometres and will be divided into four sections. Water will be evaporated from each section in turn to create a dry layer onto which more slurry can be poured. In 1971 a breach in the tailings dam at the Rum Jungle mine rendered uninhabit-

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able an area of 100 square kilometres in Northern Territory and the tax payer had to finance a A\$16m clean up operation when the owner CRA, a subsidiary of Rio Tinto Zinc, disclaimed responsibility.

Doubtful Economics

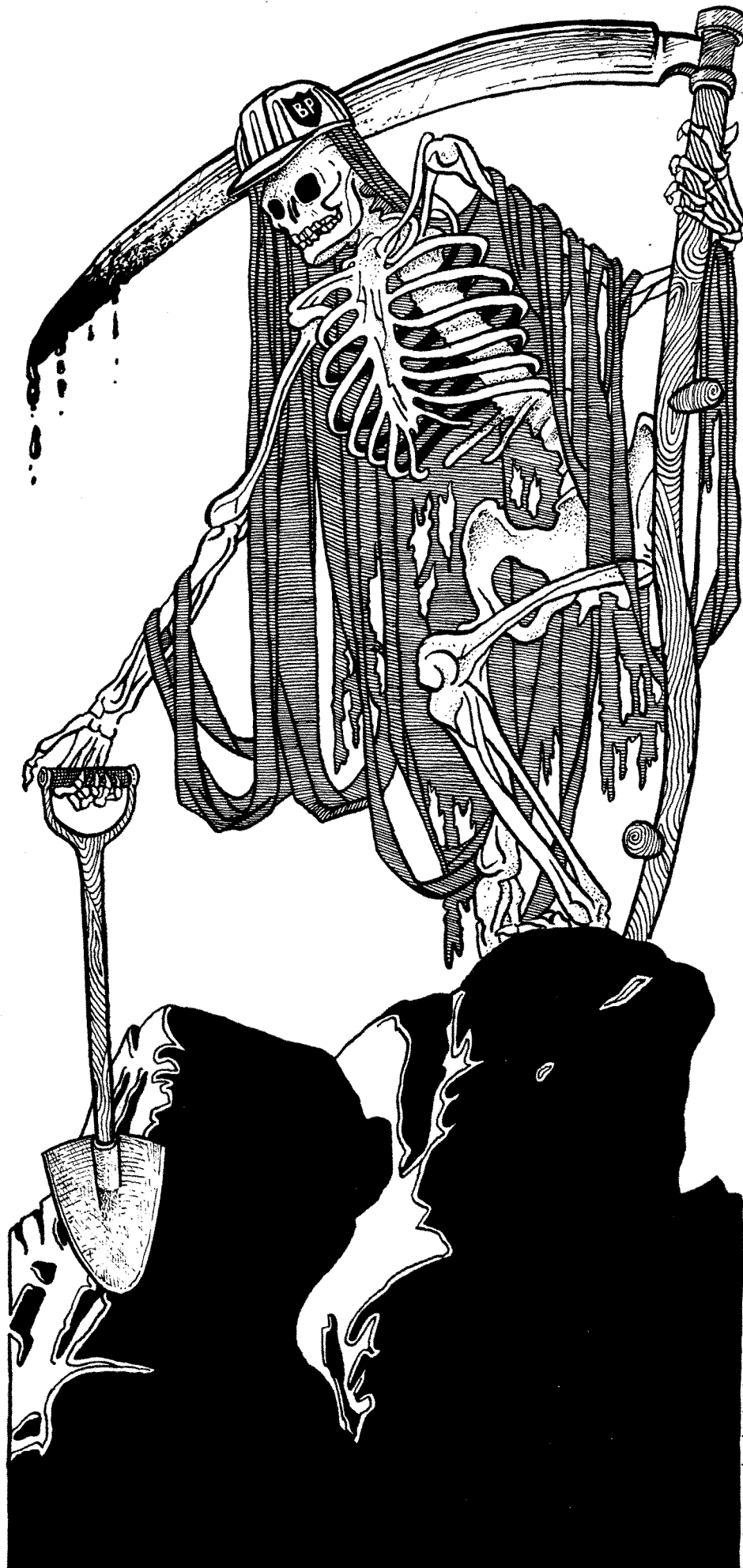
One of the main arguments against the Roxby project is the world glut of uranium and the low prices of copper and gold (compared with when the reserves were first discovered) The current spot market price for uranium is US\$16 per pound compared with the \$45 price in 1978. This drop in price is a result of the cuts in the nuclear programmes in North America and Europe in the face of weak electricity demand, and the dumping of surplus uranium oxide on the market.

Markets for the Roxby uranium have still not been found despite a visit to Japan last year by the South Australia premier and a WMC director to attempt to secure a contract. The Australian Campaign Against Nuclear Energy is concerned that France, with whom there is supposed to be a uranium export ban, is being approached.

BP Australia was brought into the Roxby project in 1979, when the company was cash-rich and hungry for diversification, when it became clear that the development costs of the mine would be more than the total book value of WMC. BP were to cover the cost of the preconstruction work and fund their own A\$1,600m share of the development as well as guarantee borrowing by WMC. BP is 31% owned by the British government and 20% owned by the Bank of England.

To show support for the Kokotha people a 'Boycott BP' campaign is underway. Boycott BP petrol stations in this country and tell the garage proprietor of your reasons; write to BP opposing their involvement in the Roxby Downs development (address below); lobby your local authority to disinvest from BP; and write to the addresses below for more information and to offer support.

BP, Britannic House, Moor Lane, London EC2.
The Manager, Government and Public Affairs, BP Australia Ltd, Melbourne, Victoria, Australia.
Campaign Against Nuclear Energy, 4th floor, 13 Hindley Street, Adelaide, South Australia 5000.
Kokotha Peoples Committee, c/o Betty Dohnt, 11 Anderson Crescent, Port Augusta, South Australia.
Nuclear Free & Independent Pacific support, 82 Colston Street, Bristol 1.
Boycott BP Campaign, The Green Partry, 36/38 Clapham Road, London SW9.



BOYCOTT BP:

W. PLUM, adapted from a picture by Stephen Lawrence

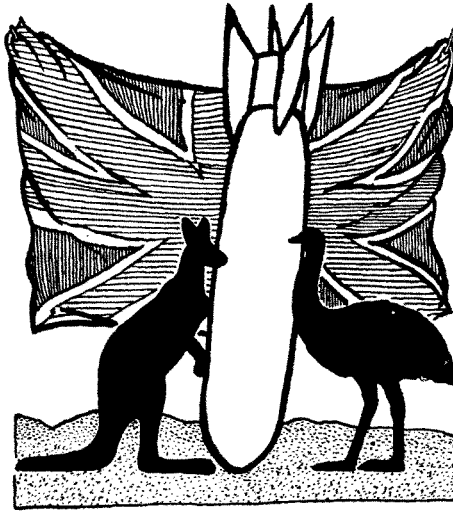
A~Tests: Britain Guilty

At the end of last year the Australian Royal Commission published its Report into British Nuclear Tests in Australia. The Commission heard evidence from scientists and ex-service personnel. Paul Draper has read the Report and explains some of the background and describes the Commission's recommendations.

On 3 October 1952 Britain detonated her first nuclear weapon on the Monte Bello Islands off the south coast of Australia. This marked the beginning of a 12 year period of nuclear testing by Britain in Australia following refusal by the American government to allow the use of their Nevada test site. Australia played a secondary role in the tests but received no benefits and many costs in terms of radioactive contamination.

In 1984 the Australia government convened a Royal Commission to look into the effects of the British nuclear tests. The Commission was chaired by Justice McClelland and included lawyers acting for the Aborigines, the Nuclear Veterans and the British and Australian governments. The Commission's terms of reference were to assess whether adequate safety measures were taken before, during and after the tests to protect the Australian land and people. Evidence was heard from service personnel and scientists.

The Commission's Report considered the siting of the tests, criteria for safe testing, radiological protection and the clean-up of the sites. The Report contains 201 conclusions and 7 recommendations.



Much of the information for the Commission was forthcoming only after criticisms of British secrecy by Justice McClelland. This information enabled a full and detailed inquiry into the tests with documentary evidence being used to support or refute verbal testimony.

Radiological Protection

The radiation monitoring and health factors relied on data from the International Commission on Ra-

diological Protection (ICRP) which assumed a threshold dose below which no damage results. In the light of today's knowledge these measures must be seen as inadequate. The Commission noted, however, that there were departures from even these safeguards.

In practice the radiation protection standards affected two groups of people: Aborigines and service personnel.

The Aborigines traditionally roam the deserts and hence their lifestyle made them a 'critical' group which warranted special attention in radiological terms. Until 1967 the Aborigines were not entitled to vote or even to be considered in the census and their homelands were taken. The attitude to the Aborigines during the tests was summed up by the Commission:

'Overall, the attempts to ensure Aboriginal safety...demonstrate ignorance, incompetence and cynicism on the part of those responsible for that safety. The inescapable conclusion is that if Aborigines were not injured or killed as a result of the explosions, this was a matter of luck rather than adequate organisation, management and resources allocated to ensuring safety.'

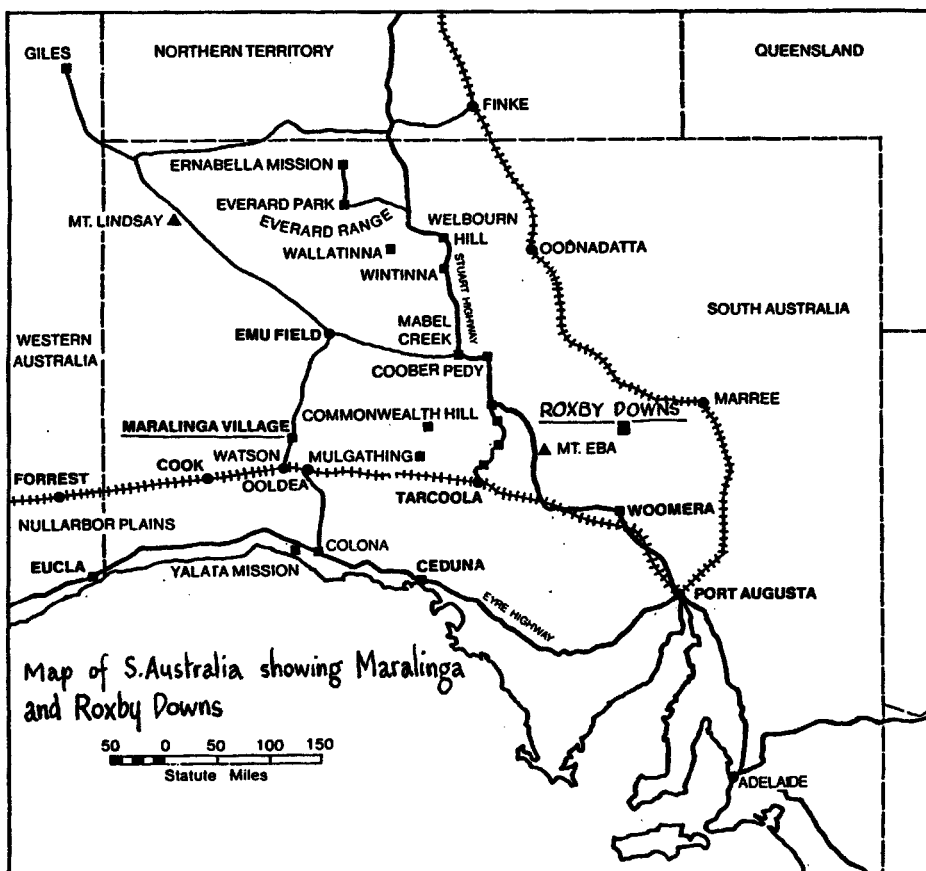
Aborigines were exposed to fallout following the Totem 1 test in the form of a 'black mist' which made many of them sick. Allegations of dead Aborigines in the bomb crater could not be supported by the documents presented to the Commission.

The service personnel received better radiological protection, but some contamination still occurred. During an operation to recover a sunken landing craft at Monte Bello in 1952 naval divers swallowed radioactive water and HMAS Koala was contaminated. The rush to decontaminate the ship, the Commission felt, demonstrated the standard and concern over radiological protection.

Aircrew, however, did not receive as much attention; during monitoring flights into the fallout clouds they did not wear radiation suits or monitors. From examination of fallout data the aircrews' dose could be extrapolated to be within safety limits but at the time this would not have been known. Also, the use of low flying aircraft to monitor ground contamination was not an effective method and underestimated the contamination.

Safe Testing Criteria

The criteria for safe testing included factors such as weather conditions and fallout levels. If any of the criteria were invalidated then the tests should not have been



carried out. The Commission's findings suggest that, in the majority of instances, the criteria were invalidated. During the Buffalo trials rain was predicted within a zone and so the test should have been stopped; it was not and the rain fell nearer than predicted. At another explosion in the same series minor contamination of Maralinga village resulted.

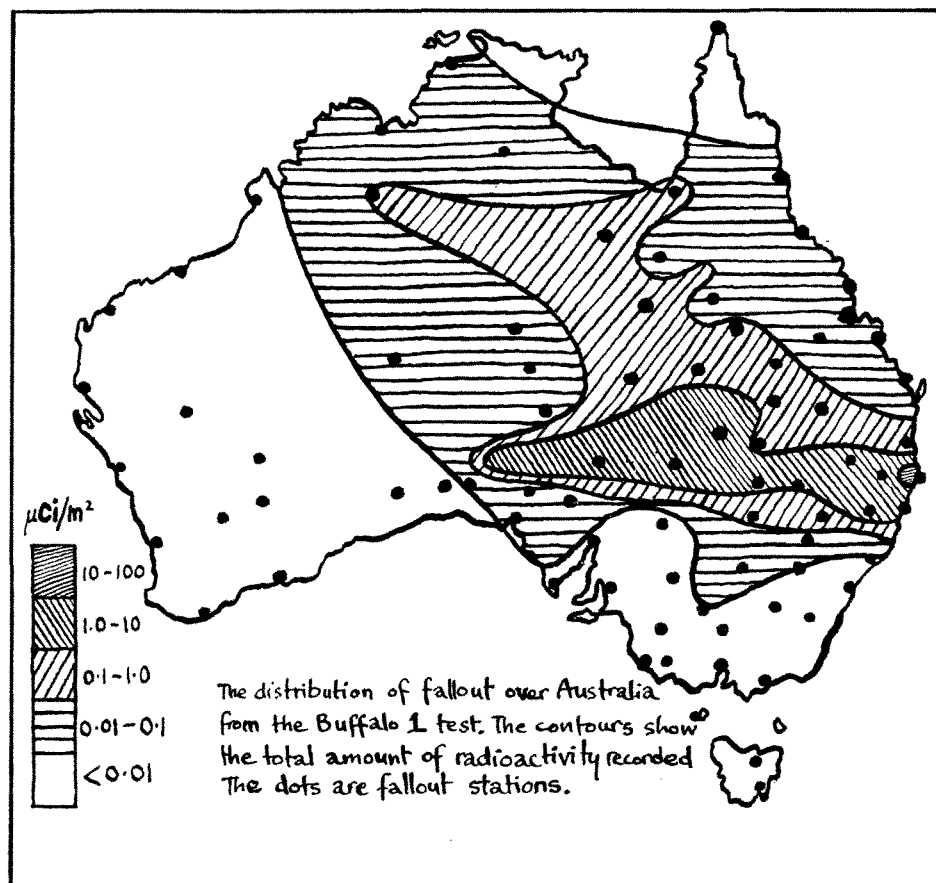
This failure to fulfil the safe testing criteria, demonstrated by contamination of the mainland and the disregard for the Aborigines, led the Commission to conclude that the Monte Bello Islands should never have been used as a site, particularly because the prevailing weather conditions limited the scope for safe testing. The other test sites, at Maralinga and Emu Fields, were situated in the desert areas of South Australia.

Recommendations

The Commission feels that the contamination of Australia by British nuclear testing has resulted in an excess of cancers, but they cannot quantify the number. This contamination is still present and so will continue to cause cancers and other detrimental health effects.

The Commission recommends that the test sites should be returned to a state whereby the Aborigines can have unrestricted access. Maralinga is a traditional homeland which was recently returned to the Aborigines, but it is still contaminated. The site was contaminated with plutonium as a direct result of the so called minor trials.

The minor trials involved burning materials contaminated with radionuclides but no actual detonations. An attempt was made to clean



up the range at Maralinga in 1967, but the Commission feels that this was a political move conducted on wrong assumptions and may have made the eventual clean up more difficult.

One of the major recommendations is for compensation to be paid to victims of the tests, both through ill health and loss of land, and a national register should be set up. A Commission should oversee the clean up operation and it should be paid for by the British govern-

ment. The Monte Bello Islands should be sign-posted to warn of the danger.

The Royal Commission Report demonstrates the dangers of nuclear testing to those involved and the pollution threat to the environment. Research at other test sites has also demonstrated this, with excess cancers observed. The need for a Comprehensive Test Ban Treaty is supported, yet again, by this Report on both environmental and health terms.

NPT ~ No Peace Tomorrow

Following our series, NPT - No Peace Tomorrow, in preparation for the 3rd Review Conference of the Nuclear Non-Proliferation Treaty (NPT), Jos Gallacher analyses the surprising outcome of the Conference itself. Despite the superpowers easy ride at the NPT Review doubts remain and the problem of proliferation has not gone away.

From the 27th August, 1985 to the early hours of 21st September delegates from 81 states party to the NPT met in Geneva to review the operation of the Treaty. Also in attendance were observers from non-party states and delegations from 'non-governmental organisations' - including Greenpeace, said to have had the 4th largest delegation in Geneva.

Contrary to all expectations

the Conference did not degenerate into a slanging match between the nuclear haves and have-nots nor into an East-West squabble. Instead of the predicted disaster the conference became something of a non-event as most delegates seemed concerned to achieve a consensus in support of preserving the Treaty.

The NPT seeks to restrict the number of nuclear weapons states (NWS) to the five which had tested

weapons before an arbitrary date in 1967. The Treaty also includes, as an incentive to non-nuclear weapon states (NNWS) a promise to 'facilitate' nuclear trade (under Article IV) and to negotiate an early end to the arms race and nuclear disarmament (under Article VI). The failure of NWS to deliver on Articles IV and VI had caused the failure of past review conferences and was expected to do so again. However, from its opening Plenary Session onwards, the Conference worked towards producing a consensus Final Declaration.

Article IV: Nuclear Power

The first surprise of the Conference was the absence of conflict

over nuclear trade. In the past developing countries have seen Article IV as a promise of nuclear-industrial development leading to high-tech prosperity. This perception no longer exists and the international anti-nuclear movement must take some of the credit for exposing the health, environmental and economic disadvantages of nuclear power.

Where nuclear aid persists it is mostly in the form of low cost projects utilising isotopes for industrial, agricultural or medical purposes.

One useful development was the insistence of the developing countries that nuclear exports should only be permitted to countries which have accepted 'safeguards' similar to NPT safeguards - known as 'de jure full scope safeguards' - thus banning exports to the main proliferation risk countries: Argentina, Brazil, India, Israel, Pakistan and South Africa. The nuclear exporters, however, concentrated on the difficulties this would impose on trade with Spain, which no-one suspects of nuclear weapons ambitions.

As a compromise the Final Declaration merely urges exporters to seek full scope safeguards. Nevertheless, there is an opportunity here for the anti-nuclear movement to demand that exporter countries accept this principle.

Article VI: Disarmament

The lack of progress on Article VI was overshadowed at the Review by the impending summit meeting and the hope of a new beginning in arms control. The Soviet Union refused the opportunity to isolate the United States (with only Britain for company) as an opponent of the freeze and a test ban.

Veteran Mexican ambassador,

Garcia Robles, who had led the non aligned states in their complaints at the previous Reviews, developed clever tactics to extract maximum concessions from the NWS in the Final Declaration. At the opening session he threatened that unless he was satisfied with the Declaration on Article VI he would move three resolutions - one calling for a Comprehensive Test Ban Treaty (CTBT), one on a nuclear Freeze and one on a moratorium on tests.

Thus Britain and the United States faced the prospect that if a Final Declaration was not agreed that they would be the only countries voting against the resolutions.

Much of the Declaration was easily agreed; the only sticking point was the CTBT, possibly as a



result of the work of the peace movement and especially Greenpeace on the issue. The non-aligned countries wanted CTBT negotiations to resume this year. The US and Britain argued that deep reductions in nuclear stockpiles took a higher priority.

Compromise language for the Final Declaration was agreed in which the Conference 'except for certain states' called for immediate negotiations; the British and Ameri-

can view was recorded and the Soviet Union's offers to negotiate CTBT were noted.

This compromise satisfied Garcia Robles but not Greenpeace who lobbied hard to have the resolution on CTBT put to a vote. Greenpeace were outmanoeuvred, partly by deft procedural footwork and partly because over forty non aligned States had not sent delegations, thus reducing their voting strength.

Other Issues

Other states supported the Final Declaration as a means of promoting their own particular issues. The threats to the non-proliferation regime by the nuclear capabilities of Israel and South Africa are recorded in the Declaration. Pacific states used the Conference to promote international support for their Nuclear Free Zone. Israel is (indirectly) condemned for its attack on an Iraqi nuclear reactor in 1981.

Thus the African, Middle Eastern and Pacific delegations all had a vested interest in agreeing a Final Declaration.

Just as the Conference was drawing to a cosy conclusion a new and unexpected issue broke. Iran insisted on criticism of Iraq for its alleged attacks on Iranian nuclear facilities. This sudden threat to the whole enterprise was only settled after the large and intimidating figure of the Australian Ambassador had persuaded the recalcitrant delegates simply to attach statements of their own to the Final Declaration.

Conclusions

The Conference can be seen to represent a shift in the politics of the NPT. In the first 10 years the Treaty belonged to the NWS. It legitimised their nuclear arsenals without affecting any serious economic or security interest. In 1980, when the 2nd Review Conference collapsed in disarray, the NNWS demonstrated that they had less need of the NPT than did the NWS.

In 1985 the NNWS made the Treaty their own. It is now an instrument they can use to put pressure on developed countries and NWS to negotiate disarmament, to prevent nuclear trade with Israel and South Africa and to respect Nuclear Free Zones. The Final Declaration can be used in this pressure.

Against this optimistic assessment it must be said that the compromise language of the Declaration weakens the force of its demands. Some policies are 'urged', others merely noted and that on CTBT contains explicit exceptions.

Finally, while the Treaty has emerged from the Review stronger than before, the biggest threat of nuclear proliferation comes from countries who continue to refuse to sign the Treaty. Should one of them test a nuclear weapon, would the Treaty survive?

Extracts from the Final Declaration

On CTBT:

'The Conference except for certain States. . . calls on the nuclear weapons states to resume trilateral negotiations in 1986. . .

On civil-military links:

'the Conference. . . recommends. . . consideration of separation of the civil and military facilities in the nuclear weapon States.'

On Israel, South Africa and Namibia:

'The Conference noted the calls on all States for the total and complete prohibition of the transfer of all nuclear facilities resources or devices to South Africa or Israel and to stop all exploitation of Namibian Uranium, natural or enriched, until the attainment of Namibian Independence.'

On Nuclear-Weapon Free Zones:

'... the nuclear weapon States are invited to assist the efforts of States to create nuclear weapon free zones and to enter into binding undertakings to respect strictly the status of such a zone. . .

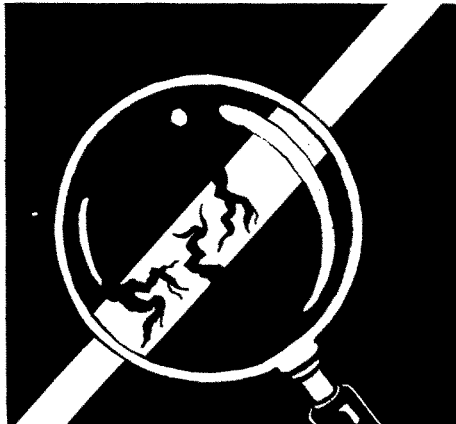
On full scope safeguards:

'The Conference further urges all States. . . specifically as a necessary basis for the transfer of relevant nuclear supplies to NNWS to take effective steps towards achieving such a commitment to non-proliferation and acceptance of such safeguards by those States.'

The Inspector Calls

The International Atomic Energy Agency (IAEA) is the UN's attempt to inhibit the use of nuclear technology for military ends. Here Rosie Bell examines a new book which looks at the Nuclear Watchdog and checks its teeth.

When the IAEA Inspector calls at a reactor he checks that the records of nuclear fuel used tally with the reports that the operator has sent to the Agency. He counts the number of fuel assemblies and checks their identity numbers. He ensures that the spent fuel assemblies aren't dummies using a 'Night Vision Device' through which he can see the Cherenkov glow, a bluish light emitted by irradiated fuel.



He runs through the films from surveillance cameras, positioned outside the reactor core and the spent fuel bay, to check that they have not been opened at unauthorised times. If there is a seal applied to the core he will ensure that it is intact.

The Inspector is not a detective looking for clues to track down a criminal; he is an auditor looking for discrepancies to report back to the IAEA which then investigates to find their cause. So far, no State has been caught diverting 'significant' amounts of material. (Significant amounts are 8kg of plutonium, 25kg of uranium-235, contained in uranium enriched to 20% or more, or 8kg of uranium-233.)

Safeguards

If material had been diverted, the Agency would have to rely on the state correcting itself out of embarrassment or pressure from other states. The Agency deters those who might misuse nuclear material rather than punishing those who have.

The Agency was set up in the 'Atoms for Peace' era of the fifties 'to seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world' and to prevent this help being turned to military ends.

At that time nuclear technology and materials were scarce and the Agency could use its supplies as a lever to make countries accept

safeguards and withdraw them when a country misbehaved. However the nuclear industry has developed and uranium has become common.

The Agency still helps developing countries with softer nuclear techniques but its chief work is operating nuclear safeguards. While commercial interests took over nuclear supplies, the Nuclear Non-Proliferation Treaty and the Treaty for the Prohibition of Nuclear Weapons in Latin America (Treaty of Tlatelolco) were signed, by which the parties undertook to place their nuclear activities under surveillance by the Agency. Indeed, 'international nuclear safeguards' have come to mean an arrangement under which the ... IAEA verifies a pledge by a state that it will not use its nuclear activities to make a nuclear weapon or any other kind of nuclear explosive'.

Larger plants are more often inspected by the IAEA since they produce more material, yet the plants that are bringing countries over the nuclear weapons threshold are small, eg the pilot reprocessing plants in India, Israel and Pakistan and the small enrichment plant in South Africa. The Agency cannot kick in the door and demand to see the plants; they have to be invited, and are sometimes in the ridiculous position of knowing of a nuclear plant unofficially, but being unable to enforce inspections.

Danger

Nor can they prevent a state from building an unsafeguarded replica of a safeguarded plant or prevent governments from building up stockpiles of plutonium. Suggestions for an international plutonium depot are unlikely to come to anything. A country can pile up the explosives under safeguards and then withdraw at any time. Iraq's reactor, Tamuz 2, was under the IAEA's surveillance, but Israel gave as one argument for bombing it that Iraq would later violate the agreement.

Another danger is that people's confidence in the Agency's ability

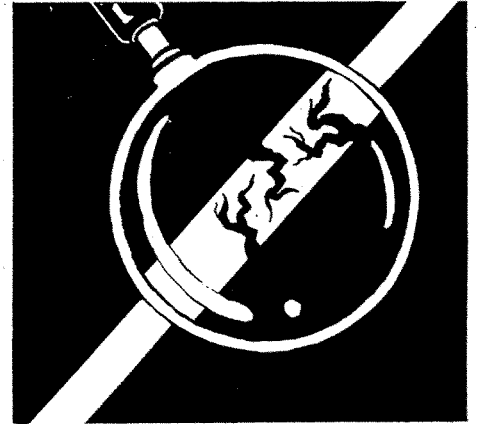


WAITING FOR A CALL

to check proliferation results in complacency; they feel that safeguarded material is therefore harmless material.

It is easy to imagine in a conflict a state refusing access to inspectors to check the potential for big anti personnel devices. Few countries actually plan atrocities in wartime; however, they do occur, even with limited means. In time of war a country is not likely to reject the sophisticated material for labour-saving massacres if it is on hand, whatever their present will.

However, the Agency is by no means a waste of time. It is like A. J. P. Taylor's good diplomat who



'cannot make two countries agree if they do not want to agree, but he can make their agreement easier if they want to agree.' It is a young organisation, underfinanced for researching and developing safeguard measures, and it is also a totally new body in one important respect. The inspector cannot be a native of the country whose reactor he is inspecting, and so for the first time states are accepting foreigners to see that they have carried out their commitments to a treaty.

The rhetoric about peace has come down to specific checks on refraining from doing specific things, and to be seen to be not doing them. It has been said that if there were controls against the cold war's vertical proliferation, which is large on rhetoric and small on specifics, the controls would be more feasible on fissile material rather than delivery systems.

So this dull bureaucracy, with its remains of national prejudices may be a sign that there are possible ways of making international co-operation against the supra-national nuclear menace.

References

All the information in this article has been culled from the excellent Safeguarding the Atom: A Critical Appraisal by David Fischer and Paul Szasz, ed. Jozef Goldblat. Pub by Sipri, £16.00

Charter for Energy Efficiency

An exciting new initiative aimed at tackling the misery of cold homes and massive fuel bills has been launched by a consortium of local authorities, voluntary organisations and trade unions. Susie Parsons, Development Manager for the London Energy and Employment Network and a speaker at the launch of the Charter for Energy Efficiency, writes about the Charter and plans to take it forward.

The need for action

Every winter, thousands of households go cold, largely because of consistent under-investment in ensuring that Britain is effectively heated and well-insulated. Nationally, the Department of the Environment estimates that at least £3000 million needs spending to improve the heating conditions of our homes. Yet there is no commitment from Government to secure this level of resources to tackle the effective thermal upgrading of the nation's housing stock. Little wonder that, in the Duke of Edinburgh's Inquiry into British Housing, it was said that condensation and inadequate heating systems 'can make life a misery'.

Local authorities have demonstrated that, given the resources, they can deal with the problems of cold homes. The Association of Metropolitan Authorities found:

'...not only do local authorities already have considerable expertise in undertaking work to secure an energy efficient housing stock, but also a direct interest in developing this area of work in order to remedy many of the severe housing problems faced by their



tenants. What is lacking are the resources and national support to get on with the job.' (An Energy Policy for Housing, April 1985).

The difficulties faced by local authorities are recognised by the Select Committee on Energy:

'In the council and housing association component of the domestic energy market, restrictions on public expenditure have for some time been a substantial restraint upon economic and desirable investments in improved energy efficiency.' (Eighth Report, October 1985).

Energy Efficiency Year

Impetus is given to the Charter for Energy Efficiency by a widespread recognition that the Government's plans for Energy Efficiency Year are aimed largely at industrial and commercial energy users. Plans for the domestic sector are based on exhortations to individual householders to insulate and draughtproof their homes, jollied along by the odd competition or two. 'Touring caravans', enthuses the Monergy '86 Information Pack, 'will visit towns and cities - from Penzance to Peterhead. These mobile units will be

seen within shopping precincts, at ideal home exhibitions and agricultural shows.' While for children 'there will be colouring books, balloons, games and even touring theatre groups'. There is nothing wrong with an attempt to make us all more energy efficiency conscious, but not everyone has the financial resources to invest in better heating, better insulation and better draughtproofing. To someone living on a low income in a home with non-existent or inefficient and expensive heating the Government's message brings cold comfort.

Government Policy

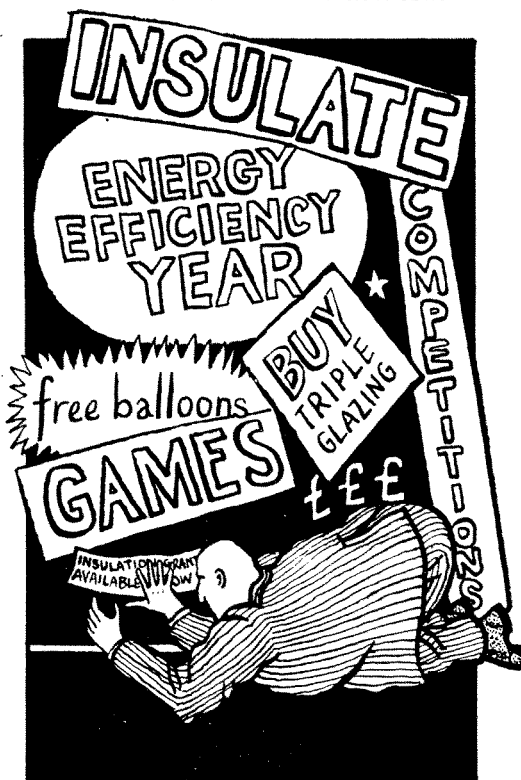
It is particularly ironic that a Government which is telling people to make their homes energy efficient is, at the same time, introducing or proposing measures which make it even less likely that low-income consumers will be able to do so. Three examples of such measures are particularly striking.

A cut in the home insulation grants scheme of £4.5 million at the start of Energy Efficiency Year has recently been announced. Taken together with the consistent under-promotion of home insulation grants, such action is unlikely to meet the recommendation of the Select Committee on Energy that:

... the Homes Insulation Scheme should now be broadened to allow the installation of cost effective insulation not at present covered by the Scheme and to permit a higher maximum level of grant - though this should be concentrated



The Government giveth...
and the Government taketh away





more selectively on lower-income homes.

Secondly, proposals within the Government Review of Social Security to abolish single payments, including single payments for draught-proofing, would remove the only method of paying for draughtproofing open to low-income households within the private rented and owner-occupied sectors.

Thirdly, a Green Paper on Home Improvements not only exhibits a complete lack of attention to thermal insulation and adequate heating at reasonable cost but actually proposes the lowering of the standard of fitness for human habitation in respect of dampness.

What the Charter demands

The Charter for Energy Efficiency sets out a five point programme to achieve an effective initiative designed to boost the energy efficiency of the nation's homes. It calls for:

- * A national commitment to boosting investment in the nation's housing stock - with priority for homes known to be hard to heat and prone to dampness.
- * Positive action to secure the rapid development of energy efficient technologies such as Combined Heat and Power.
- * A vigorous partnership with local government to spearhead the nation's drive for energy efficient homes.
- * Practical and positive support

for the operation of a national home energy audit programme geared to meeting the real heating needs of consumers.

- * New financial initiatives geared to mobilising further resources to tackle the problems faced by lower income households living in thermally inefficient and hard to heat homes.

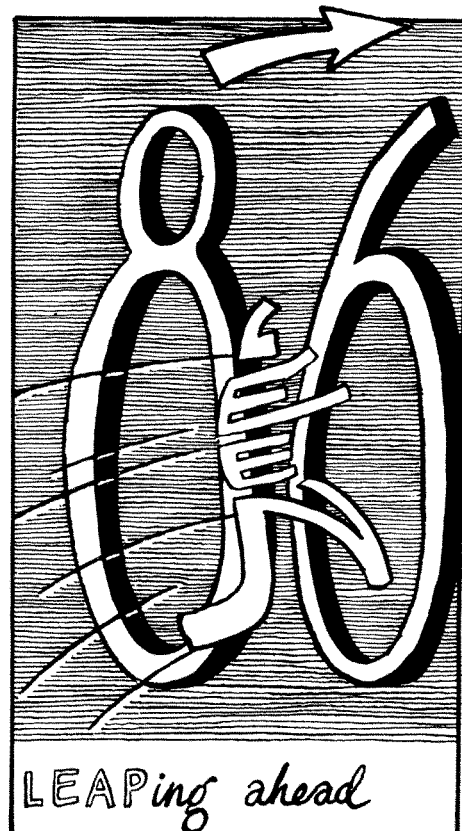
Taking the Charter forward

The sponsors of the Charter intend to make sure that its aims are translated into practical action. To this end a Steering Group is being set up to co-ordinate activities around the country. These will include:

- * regional meetings,
- * lobbying of MP's,
- * gaining grassroots support for the Charter,
- * monitoring the Government's performance in the domestic sector during Energy Efficiency Year.

In London, plans have already been made to launch the London Energy Action Plan in April 1986. This is the London Energy and Employment Network's (LEEN) contribution to Energy Efficiency Year. LEEN (featured in SCRAM Oct/Nov 85) is an organisation supported by the Greater London Enterprise Board to create employment through the promotion of energy efficiency. LEEN intends to build on its practical and policy work with London local authorities to set out an energy efficiency policy for London.

The Charter's sponsors believe



that similar developments, supported by local authorities, trade unions, tenants associations and voluntary and community organisations, will take place in other areas of the country during 1986. Such regional activity will not only have practical spin-offs (after just six months work the Hackney Heating Advice Project run by LEEN for the London Borough of Hackney brought in more than £100,000 over the next eighteen months in heating benefits to local residents) it will also put pressure on the Government to take effective measures to improve thermal comfort, save energy and create jobs.

Speaking at the launch of the Charter in Birmingham in November 1985, Labour Party spokesman Alex Eadie said:

'Tomorrow Peter Walker will be here in Birmingham to launch his 'Monergy 86' campaign. I know that many people welcome this initiative - however, we must recognise that unless his government colleagues actually start investing in Britain's housing stock then his campaign will fail to have any impact whatsoever on vast numbers of homes - particularly where people are too poor to respond to the rhetoric of 'Monergy'. Norman Fowler's Social Security Reviews themselves threaten the continued viability of the 200 local insulation projects sponsored by many community agencies.'

For a copy of the Charter contact Alan Sinclair at the Glasgow Office, Unit 1/1, 8 Elliot Place, Finnieston, Glasgow G3 8EP, Tel: 041 248 3993.

Scotlands Housing Crisis

Scottish Councils need to invest about £700m each year for the next ten years to improve their housing stock; the Government is allowing Councils only £280m this year. Steve Martin reviews the campaign by the Convention of Scottish Local Authorities (COSLA) to press for increased investment.

Scottish local authorities are committed both to improving their existing housing stock and continuing to build for the future. In doing so they are aware that the 5 million people living in Scotland deserve



homes which are in good repair and modernised to present standards.

A major area of concern is dampness; 314,000 council houses suffer from dampness and condensation and a further 50,000 are in need of major or structural repairs. In all, over 90% of Scottish public sector houses are in need of some improvements.

These improvements should take the form of providing roof and wall insulation and replacing old, inefficient and expensive heating systems to make the homes warmer and cheaper to heat; removing asbestos which is a danger to health; improving open spaces in estates to provide play areas, landscaping etc; and carrying out the routine repairs and maintenance.

To carry out these improvements the Councils have calculated that they need to invest £700m each year for at least the next ten years. The Government's allocation of only £280m will not even allow the Councils to keep all their houses wind and watertight. COSLA is pressing the Government to act now to increase spending limits for council



housing before the situation becomes any worse.

Council housing - who pays?

The Councils must raise the money to spend on housing each year,

mostly through borrowing and, increasingly, through council house sales. This year Scottish Councils will have to pay nearly £340m in interest charges, as well as £76m of their existing loans. Most of the Councils' housing income comes from rents, with central Government providing the Housing Support Grant (HSG).

The HSG is the only government subsidy available to council housing and was first introduced to make up the difference between what a council needed to spend and what it could afford to spend. This Government's commitment to public spending cuts has led to a reduction in HSG and means that tenants are expected to meet more of their housing costs through higher rents. Since 1979 Scottish public expenditure on housing has been cut by half.

There is a shortage of adequate housing in Scotland; one in seven households is overcrowded. The council waiting lists currently include 120,000 families, and 15,000 families a year apply for accommodation. Moreover, over 11,000 homes suitable for the disabled and 57,000 sheltered and amenity houses for the elderly are urgently needed.

Houses and Jobs

It has been estimated that every £1m invested in building and improving houses creates 110 jobs. The difference between the £700m on council houses and £180m on grants etc which the Councils need to spend and the total Government allowance of £385m - £495m - could have created nearly 55,000 jobs this year alone, and all this when there are over 350,000 unemployed in Scotland.

The Private Housing Sector

Many of Scotland's worst housing conditions are to be found in the private sector. Many private houses are owned by elderly owner-occupiers who are unable to afford much-needed improvements on their small pensions; others are rented out, often to people who have particular difficulties obtaining suitable accommodation.

At least 50,000 older houses still lack Standard Amenities: hot and cold water supply to a sink, a wash hand basin, a bath or shower and a toilet. The Councils have a legal responsibility to ensure that houses meet at least a minimum standard which takes no account of the general state of repair of the building.

Regular House Condition Surveys are carried out in England, Wales and Northern Ireland but the government has refused to perform a similar Survey in Scotland despite the evidence presently available which suggests that the amount of disrepair in Scotland is even worse than the alarmingly high level in the rest of the UK. COSLA Believes that the Government has refused the Survey because it is afraid that it will prove that spending limits are hopelessly inadequate to deal with the needs of Scotland's houses.



The Crisis

Government policies are storing up worse problems for the future; repairs get more expensive if they are left and houses are getting older, so the backlog increases each year. Lack of investment in housing now will create new slums in years to come.

The COSLA Campaign calls on the Government to:

- * Urgently commission a Scottish House Conditions Survey to assess Scotland's housing improvements costs;
- * Allow Scottish Councils to increase their housing investment to a minimum of £880m a year, and provide the necessary grants; and
- * Guarantee this level of expenditure so that the councils can programme their work.

The Campaign is financially supported by 41 City, District and Island Councils.



This article was drawn from the 'Scotland's Housing Crisis' leaflet produced by COSLA. The leaflet and further information is available from Sally Wainwright, 'Scotland's Housing Crisis', COSLA Housing Campaign, Freepost, Edinburgh EH3 0EE. Tel: 031 225 1626.

During 1984/5 the Victorian State Government of Australia spent A\$12.5m on programmes of assistance to meet the energy needs of low income people. The Australians call this 'the human face of energy planning'.

The schemes include a winter energy concession which reduces energy bills by 20% for pensioners and claimants; energy relief grants to provide debt relief in special circumstances; and a free home energy advisory service which can recommend expenditure of up to A\$250 for improvements. Substantial reductions in the number of disconnections have been achieved.

Energy Manager, February 1986

CHP

It has taken the EEC less than a year to do what UK governments have been thinking about for 15 years: allocate substantial funds for a combined heat and power system using waste as a fuel. And the recipient project is Corby in Northampton. Construction should begin this year and the power station is expected to start operating in 1989.

The East Midlands Electricity Board (EMEB), part of the consortium which also includes Corby District Council and GEC Energy Systems, is reported to be delighted at the EEC decision to give nearly £14m for the scheme. 'We believe this will mean lower heating costs for Corby industry', said Philip Champ, the EMEB's NW group Manager.

The station will generate 25MW of electricity for the grid and up to 50MW of low-cost heat for nearby factories, commercial premises and civic buildings by burning 400,000 tonnes of municipal waste every year.

Warner Bulletin, Dec 85

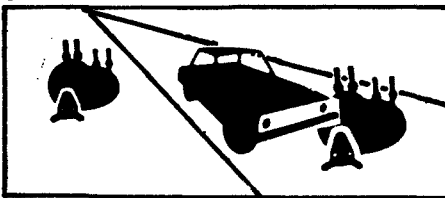
Peter Walker, the Energy Secretary, signed a memorandum of understanding on energy cooperation between the UK and Greece on 3 February. The two countries have agreed to 'promote and develop collaboration between energy organisations and to encourage trade in energy technologies'.

Areas of cooperation are:

- * energy efficiency including CHP, steam utilisation heat recovery and electronic energy management;
- * renewables such as solar, wind, biomass and geothermal;
- * hydrocarbons involving exploration, development and production both on shore and off-shore, and manufactured gas;
- * coal mining, safety, preparation and gasification;
- * combustion technologies based on oil, coal, and waste materials;
- * hydroelectric systems covering technology, economics and environmental aspects.

Exchanges of information and experts may take place as well as visits by specialised delegations on energy matters. Joint research, development, investment, manufacturing and production projects may be undertaken and conferences on subjects of mutual interest may also be organised.

All sounds very encouraging except for two things: very little investment is being ploughed into the UK's own 'alternatives' R&D, and the memorandum also includes nuclear cooperation cynically hidden in the DoEn press release in the section on combustion technologies.



Baaah! (sick)

A cogeneration and heat recovery system in Orangeville, Ontario is expected to save the town at least \$70,000 in electricity and heating costs in its first year of operation. The heat recovery process could earn the town about \$10,000 a year from the sale of heat.

The system takes advantage of the town's sewage treatment works and uses the methane to generate both thermal and electrical energy to heat and light the treatment plant. Excess energy is used to heat a nearby school.

The total cost of the system is \$320,000 and is part of a \$5m plant expansion at the town's water pollution control plant.

Building Services & Environmental Engineer, Jan 1986

An estimated 10% of New Zealand's growing demand for diesel oil could be met by the use of surplus tallow from lamb carcasses; each lamb could provide 2.25 litres of the fuel.

The scheme has been developed by Perkins, a UK company and involves processing the tallow into methyl ester and blending it with autodiesel. Field trials, involving 40 trucks and a boat, have produced promising results so far but the large scale introduction of this fuel will only go ahead if it is economically sound; New Zealand is anxious to have an indigenous source of fuel.

Perkins is also involved in a scheme in Malawi to produce the diesel substitute, ethanol, from

Many important aspects of energy saving are still not covered by the Building Regulations, including ventilation, solar gains, lighting, boiler efficiency and domestic heating controls. Our European partners, on the other hand, ensure much better energy standards in buildings, particularly by introducing approval or labelling schemes.

This was the message delivered to a conference in Edinburgh recently by Neil Millbank, the head of environmental physics at the Building Research Establishment. Mr Millbank said, 'If we are to be serious about our national energy efficiency objectives, our Building Regulations have to go beyond the simplistic approach of looking only at U-values.'

There is now a major review of the Regulations being undertaken in England and Scotland in order to alter the conservation of fuel and power aspects of the requirement for new buildings.

However, Humphrey Sharp, the Senior Scottish Office architect, felt that the main criteria for change must be consideration of the add-on cost of new measures, the difficulties of enforcement and the general desire not to add to the problems for the building industry.

Energy Manager, February 1986

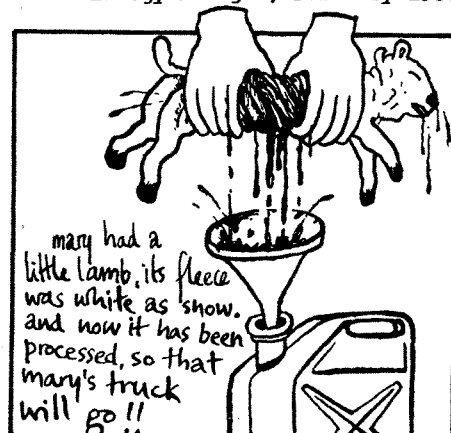
Solar

Puerto Rico is to get a solar power station. The 100kW project will supply electricity to the grid near the island's southern coast town of Juana Diaz. The station will be supplied by Solarex Corporation of Maryland and comprises 2106 photovoltaic modules each with a guaranteed minimum power output of 46W. The Puerto Rico Government foresees the project as a demonstration of photovoltaics for potential investors.

Building Services & Environmental Engineer, Jan 1986

cane juice and molasses. Brazil already uses alternative fuels derived from sugar.

Energy Manager, February 1986



The Greentown Group is set to begin Phase 1 of their cooperatively-run, self build village in Crownhill on the western edge of Milton Keynes in July this year (see SCRAM 49). About 20% of the 35 acre site will be developed with the assistance of Rother Self-Build Consultants Ltd.

The Group has registered Crownhill Village Association Ltd (CVA) to develop the land. CVA will acquire the freehold/leasehold of the land for Phase 1 and will lease land to individual housing clusters. These may take the form of conventional Self-Build Housing Associations, Housing Cooperatives aiming for a group mortgage or other legal structures. All adult members of the village, starting with residents of

Phase 1, will have one share in CVA and be able to play a full part in running the village.

This year the Building and Social Housing Foundation (BSHF) of Coalville, Leicestershire, will make two awards of £10,000 as part of the International Year of Shelter (1987) for the Homeless, for developing and developed countries respectively. Greentown has been shortlisted in the second category. The BSHF seeks schemes which 'identify human settlement projects that offer sustainable futures to the residents and present practical and imaginative solutions to current problems (of unemployment, diminishing energy resources and lack of housing opportunities, for low-income people).

The project still faces obstacles from the planning authorities. After pressure from Milton Keynes Borough Council, the Department of the Environment gave Milton Keynes Development Corporation permission for residential development only in this part of Crownhill. Initially Phase 1 will not be allowed to contain any major 'commercial' land uses, such as workshops or horticultural businesses. As the 45 homes in Phase 1 are completed CVA intends to obtain permission to develop the village centre and the rest of the project as it has always been planned; that is as a mixed-use development.

Contact David Olivier on 0908 314381.

■ Solar

The Energy Technology Support Unit (ETSU) of the Department of Energy has commissioned a major research & development exercise aimed at establishing a rolling programme of efficient low cost monitoring of passive solar buildings.

The work, which will run for over three years, has been contracted to 2 teams: Databuild Ltd (Engineering, Architecture and R&D Consultants of Birmingham) and The Welsh School of Architecture (of the University of Wales Institute of Science & Technology [UWIST] in Cardiff).

This Minor Field Trials project grew from mounting concern at the high monitoring costs and lengthy timescales of conventional monitoring of energy efficient buildings which inhibit the range of subjects which can be studied in the field and hence the turnover of feedback to building designers,



contractors and users.

Since the main thrust of the R&D projects is to underpin and promote the replication of successful technology, it is essential that they are responsive to developments in industry. The Minor

Field Trials project will achieve this by spending about one year developing a package of measurement, analysis and reporting techniques which can be deployed in a wide variety of energy efficient buildings incorporating passive solar technology. Thereafter each of the two teams will complete and report about 8 trials a year.

ETSU, Databuild and UWIST are confident that this form of field trial work represents the next logical step after a decade of R&D in energy and buildings. The industry now requires rapid feedback on a range of applications of energy efficiency technology. For this to be possible, a standardised, but flexible methodology is needed and it must place as much emphasis on analysis and dissemination as on measurement. For further details contact Dr Alan Hildon on 021 236 6477.

■ Wind

Sail power is back in vogue, not for twee TV series about tea clippers, but as big business cutting ships' fuel costs by 25%.

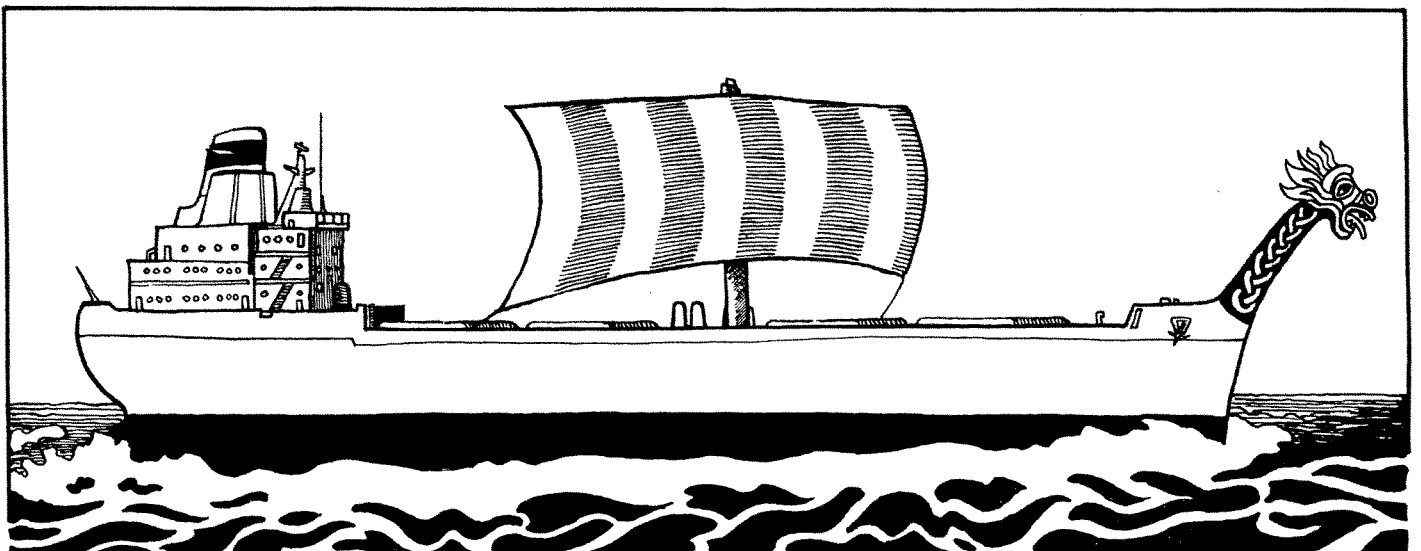
As always the UK is well behind world trends, with the Japanese already operating eight sail-

assisted freighters. The first British ship to use the ages-old 'new' technology of sail power will be the Ashington, a small bulk carrier operated by Stevenson Clarke Shipping.

The Ashington will use a 7

tonne computer-controlled Walker Wingsail made from steel, light alloy and plastic. The Wingsail is an aerofoil, which not only harnesses the wind's power, but also stabilises the ship.

Financial Times, 13.1.86





The Central Electricity Generating Board (CEGB) has been testing various designs of wind generators at Camarth Bay in Wales for the past three years and has now taken the plunge with a 1MW machine to be sited at Richborough in Kent.

The latest machine has been ordered from James Howden & Company of Glasgow at a cost of £2.8m which will be paid for by a consortium comprising the CEGB, the Department of Energy and the EEC.

Howden is the UK's market leader in wind energy technology and has a history of association with the electricity boards; one of

their 300kW turbines has clocked up 7000 hours of successful operation on Burgur Hill in the Orkneys for the North of Scotland Hydro-Electric Board and the Board plans to install a 750kW turbine on Shetland this year. The company has also just completed a \$48m contract for 75 turbines for California (see SCRAM 47). The Californian wind farm represents an annual saving of over 100,000 barrels of oil.

Despite Howden's success the UK is slow to keep up with the burgeoning world market for wind turbines, which is led by Denmark. The Danes have a high commitment to

renewable energy with tax credits to subsidise the installation of wind, solar and biomass energy systems.

These incentives proved so popular that the £5m allocated for last year ran out six months ahead of schedule, and the wind machine manufacturers are pressing for the allocation to be doubled next year. There are 20 wind energy companies in Denmark, employing 2500 people and 1985 exports are expected to reach £150m. There are 1300 wind turbines operating in Denmark, with 800 connected to the grid supplying 50MW of electricity.

Biomass

Coconuts can be a source of energy, twice! This is the aim of a project presently being undertaken in Tanzania by the aid agency German Technical Cooperation. The agency has started a pilot plant which burns coconut shells, and produces charcoal and gas as a result.

When burnt 10kg of coconut shells produce 3kg of charcoal and 5.5kg of gas, compared with only 0.1kg of charcoal and a dirty, unusable gas from the same quantity of wood; and Tanzania is almost as short of wood as it is of petroleum.

Petroleum products account for 60% of Tanzania's export earnings to bring in much-needed foreign currency; the coconut products could cut the costs of electricity by two thirds. The pilot plant alone could save \$75,000.



Wood is the other scarce resource which the coconut products could save; 10 million tonnes of wood per year is converted into charcoal for cooking in the capital city, Dar es Salaam.

However, the new charcoal has not been readily accepted by the consumer; it burns too quickly and is too hot. Attempts to introduce new technology in Africa often fail if the results are not up to the traditional standards, and extra financial outgoings create hardship in conditions of poverty.

New Scientist, 16.1.86

Insulation

The budget for next year's English Homes Insulation Programme - the only government scheme to assist energy efficiency investment throughout the residential building sector - is to be 20% below the current value. The Government has officially designated 1986 as Energy Efficiency Year!

For the past nine years those with no loft insulation have been entitled to claim from their local council up to at least £69 towards the cost of installing some insulation. Since August 1984, the scheme has been expanded to include those with less than one inch of insulation.

Andrew Warren, Director of the Association for the Conservation of

Energy, described the cuts as 'a very unhappy start for Energy Efficiency Year'.

He went on, 'When this time last year the insulation budget was reduced by 15%, we wrote to the Prime Minister urging that the Home Insulation Scheme be transferred from the Department of the Environment to the Department of Energy. We repeat this plea with even greater vigour this year.'

The Government's laudable aim of making Britain Europe's most energy efficient nation within the lifetime of this Parliament can in no way be helped by this damaging reduction in financial assistance to householders.

The overall budget has been

reduced from £28m (1985/6) to £23.5m for next year. This could mean up to 60,000 eligible households will be unable to claim assistance during 1986/7.

'Unless reversed, this decision will mean cold homes ... more fuel wasted (and) could reduce jobs further in the insulation industry. It could increase the dangers of death from hypothermia.'

'I would advise everyone now eligible for a loft insulation grant to contact their council before the end of March, before these new reduced allocations minimise their chances of acquiring a warmer, cheaper to run home,' concluded Mr Warren.

Contact Andrew Warren on 01 935 1495.

Edge of Darkness, BBC 1 & 2

It was gratifying that the Edge of Darkness was so successful. There were things to complain of it as a thriller. The action was incoherent, with people constantly getting shot whom you'd only glimpsed before and whose part in the plot had escaped you. It was exasperating to keep seeing the dead daughter popping up and arguing with her father. No doubt many were insulted by the idea that the CIA was behind starting up an anti-nuclear movement. (Would that it were true. Then we wouldn't be chronically short of funds.) The writer of the screen-play, Troy Kennedy Martin, seemed to think in terms of effective scenes, rather than a dove-tailed plot, and connected events with a blurry cynicism. Everybody was supposed to be manipulating everybody else; how or why, you could not tell.

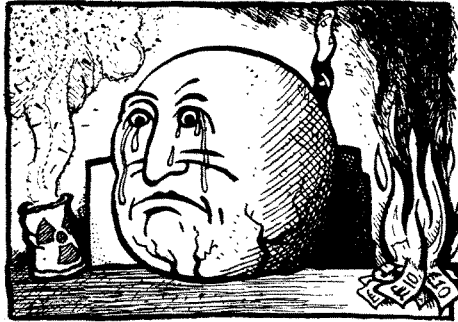
Thriller writers are always partisan. They will give victory to the side they approve of - the more sophisticated will give them moral victory. They long to tell you how the SAS stands between the free world and destruction or how peace groups are really run by Moscow. Their chart of the world plots half-hidden forces and their powers - the media, big business, the secret services and underground groups. A good thriller may not make you believe that the actual events are likely to have happened, but the atmosphere it creates will make the power of these forces in the world seem large and true.

Thus it is not to be believed that two men even as loopy as the hero Craven and the CIA agent Jedburgh would go down into a hot cell to face certain and hideous death. But the whole atmosphere was dense with nuclear menace. The climax, when Jedburgh faces the NATO security people who are sharing their fantasies about eating this planet dry to fuel the equipment needed for

their dreams of doing the same to other planets, and he zaps them with two lumps of plutonium brought together at critical mass, must have acted out the desires of many anti-nuclear activists and passivists. It was good of the BBC to repeat the series, but did they have to choose the Xmas period when most people are unlikely to be in for three consecutive nights.

R M Bell

Note: Re symbol of black flowers - space does not permit my dealing with that subject with the depth it deserves.



Public Reactions to Nuclear Power: Are there Critical Masses? Paradoxes of Western Energy Development: How can we Maintain the Land and the People if we Develop? American Association for the Advancement of Science, Selected Symposia 93 and 94, Westview Press

Both these books are edited collections of papers and, though published in 1984, the latest includes material relating to 1982.

Of the two books, only 'Public Reactions to Nuclear Power' is likely to be of interest to a general reader. A number of papers are presented which examine public perceptions of the nuclear industry, beginning in the early 1970's (and therefore covering a period in which public concern about nuclear power

steadily grew) and ending sometime after the accident at Three Mile Island (1979) which many considered represented the end of the road for the American Nuclear Industry. Though most papers are broadly 'neutral' in tone, the contributors vary from committed green activists to employees of the nuclear industry.

Of particular interest is the repeated view that the American public's disenchantment with nuclear power has developed gradually over time in association with increasing concern about environmental pollution and rising costs and inefficiencies in the nuclear programme. It has not arisen suddenly as a consequence of particular accidents such as Three Mile Island. Similarly, public concern about nuclear power is shown to be a consequence of informed opinion and is greater amongst those with scientific knowledge or interest than in the public as a whole (always excepting, of course, those actually working in the nuclear industry).

The second volume under review, 'Paradoxes in Western Energy Development', is concerned solely with the south-western United States and includes a series of case studies of options for the development of the energy resources of this part of North America. As such it is of rather little interest in a European context, though it includes some interesting pieces. For example, the emphasis is on the development of fossil fuels, thus there is detailed consideration of pollution controls in fossil fuel extraction as well as combustion. Since the coming of the Reagan administration such controls have been considerably weakened, both through legislative changes and through financial and staff restrictions on the regulatory agencies. That situation, at least, is not wholly unfamiliar to the British reader.

Mike Leven



not a pathbreaking book...

Nuclear Power - Assessing and Managing Hazardous Technology ed. Martin Pasqualetti and K. Daniel Pijawka, Westview Replica Eds, 412pp.

This is a collection of academic essays, on the state of the art in risk assessment and cost benefit analysis of various aspects of the nuclear fuel chain, principally of reactor safety. Written by geographers, it places emphasis on the spatial distribution of such risks. Most of its case studies and international comparisons of administrative procedures are drawn from English speaking countries.

The authors are better at revealing their assumptions of their role as technical advisors to neutral administrators than they are at assessing nuclear power. Their bias is towards nuclear reactors at the expense of the rest of the nuclear fuel cycle, towards catastrophic events rather than the problems of routine operations, and towards engineering rather than economic, social or political risks. Although some contributors recognise this bias, they do not put up a framework for analysing the whole fuel cycle nor do they appear to be aware of any research concerning routine discharges or of the social construction of risky activities. They are not self-critical of their role as academic risk-experts.

Apart from the balance and coverage of the contents, the collection is well edited. The index is insufficient for a 400 page volume and I would have preferred a consolidated bibliography for all the papers. It is not a path-breaking book. Perhaps its successor will be.

Going Critical: An Unofficial History of British Nuclear Power by Walter C. Patterson, Paladin, £2.95, 184pp.

Who Decides? Accountability and Nuclear Weapons Decision-Making In Britain by the Oxford Research Group, £1.00, 24pp.

Walt Patterson's latest offering on the machinations of the British Nuclear Industry complements the recent book by John Valentine (Atomic Crossroads - SCRAM 51). Going Critical divides its attention

equally between the AGR and PWR controversies, and the unenviable bunglings of the reprocessing and fast reactor development programmes. It is a history of power politics as far as these can be ascertained from public statements which escape the interiors of Whitehall and the Department of Energy. Assiduous readers of parliamentary reports may not learn a great deal, but most people will learn a lot from Walt Patterson's account of events and inquiries which he has watched closely even if he has not been personally involved.



Without wishing to belittle his work, there are a few points about the book which disappointed me. The proof-reading was not perfect, with one glaring error on p124 recording the Windscale Inquiry as starting on 14 June 1974 - it should read 1977. While the book is intended to be journalistic, a slightly more systematic approach which gave an itemised tabulation of the costings over the years for THORP, the MAGNOX refurbishments, and the SIXEP plant at Windscale, and which gave full and detailed references for statements of fact, would have been far more useful without detracting from the flow of the text. The note on sources on p179 which stated 'assisted by my... files...' which now occupy upwards of two cubic metres of study space' was irritating and frustrating. How may others judge this interpretation of events without knowing the sources?

In contrast to Walt Patterson's detailed history, the pamphlet from the Oxford Research Group is a sketch of the relative influence exercised by various institutions on British procurement of weapons. The pamphlet attempts to do what Walt Patterson does not: to identify the key decisions in the life of a weapons programme, to identify which

institutions have most influence on that decision, and to ask how accountable those particular institutions are. It obtains a general picture from an analysis of a number of weapons programmes. It concludes that the key point is the decision to pursue a development programme and that no publicly accountable body has any influence on, or necessarily any knowledge of, such decisions.

The anti-nuclear movement cannot afford to repeat the self-congratulatory and uncritical stance of the nuclear industry. In this light, I would have liked to have seen the conclusion to the chapter on British involvement in the European Fast Reactor Programme put in the form of a question - what is the rationale for this international programme?

Making much play of the ineptitude of BNFL and the UKAEA, in particular, in a light satirical style, the book is easy to read, yet disturbing. If you haven't given your MP, your stockbroker friend, or your neighbouring nuclear chemical engineer a copy yet, now is the time to do so.

This is an analysis which has not been conducted so clearly in the case of nuclear power programmes. As the pamphlet says, 'deployment happens regardless of public protest and because a weapon has been in preparation for fifteen years or more': it is high time that this was realised by the anti-nuclear power movement - by the time there is a public inquiry into a specific development the decision has already been taken. The current EDRP outline planning application is the consequence of decisions taken four years ago: the same will be true for the Fast Reactor if it ever comes to a planning inquiry.

Who Decides? would have been a more useful tool if it had looked more carefully at NATO and at the relative influence of other European countries. The pamphlet does not help one to understand the significance of the recent resignation of Heseltine over the Westland affair. This conflict marks a deeper struggle concerning a possible strategic realignment within Europe around which similar conflicts are likely to continue.

Ian Leveson

Active Solar Energy

Broad range of solar energy topics, including: - practical problems of making and installing solar panels; design of solar heating systems; operation of solar heating systems.

February 14-26 Cost, £95, £70, £45 for highwaged/low waged/claimants respectively
Centre for Alternative Technology, Machynlleth, mid-Wales. 0654 2400

Passive Solar Buildings

Principles of passive solar buildings, Trombe walls, case studies, retrofit, storage and insulation.

February 21-23 Cost: as above.
Place: as above.

Environmental Education

Practical Alternative Technology for schools and colleges. The contribution Alternative Technology makes to environmental education.

April 11-13

Cost: as above

Place: as above.

Exhibition

An exhibition of art and craft done by women about and at Greenham is planned. Send drawings, paintings, sculptures, photos and anything else women would like to see included to: Greenham Art, Wimmins Peace Camp, Greenham Common, Newbury Berks. Valuable items should be sent registered. Send cheques also to the above address.

Conferences

'Civil Nuclear Power: Policies and Options'
Workshops include: nuclear power and proliferation, waste disposal, energy demand predictions, plutonium production and military links, and scientific education. Speakers include: Dr Brian Wynne, Dr Colin Sweet, Prof John Ziman.

8 March, 10-4.30, £6

Contact: Dept of Continuing Education, 19 Abercromby Square, Liverpool University, PO Box 147, Liverpool L69 3BX

Seminar

Living with Hazards will seek to cover all those situations where the results of an accident could have serious consequences for the communities around.

Contributions from: Industry, Local Authorities, Statutory Bodies.

5 March, 9.30-4.30

Contact: TCPA, 17 Carlton House Terrace, London SW1Y 5AS. 01 930 8903

Courses

Solar Installation, 'Green City', Energy Management, Saving Energy, Toboggan and Kite making and more.
Contact: Community Energy Workshop, 109 Philip Street, Bristol BS3 4DR. 0272 633895

Little Black Rabbit.



Little Black Rabbit was paying a visit to friends in East Lothian over the festive season and decided to make a long-overdue trip to assess the progress of the Torness nuclear power station.

This visit was essential because there had been many rumours circulating about the plant: was it really on target as the Electricity Board kept maintaining, or was it failing behind?

Our intrepid long eared friend was surprised to hear that the scaffolding was being taken down from around the number 1 reactor: was it indeed on time after all?

On a subsequent visit the following month Little Black Rabbit heard that the scaffolding was being put up again! Why? Maybe it wasn't on target, or perhaps some problem had been encountered which required remedial action?

Little Black Rabbit decided to do some burrowing to try to find out what was going on at the site. It wasn't long before the story began to emerge. A reporter from the Scottish Sunday Mail rang to say that a leak had been discovered during pressure testing: was it significant?

The helpful people at the Electricity Board Head Office explained that the leak was not dangerous and these things do crop up the first time the system is pressure tested. It will be corrected before the reactor is fuelled and it shouldn't affect the schedule.

Little Black Rabbit is still apprehensive because of the leak in the primary cooling system of Hinkley Point B in Somerset. Torness is the same type of power station.

So, was the scaffolding replaced to get access to plug the leak? Little Black Rabbit heard that a loan of £150m from the European Investment Bank, an independent financial institution within the European Community, was conditional on testing being carried out by January 1986. Is it possible that this stipulation dictated a premature testing?

Moreover, reactor number 1 has been ~~expected to be~~ fully commissioned next summer, but number 2 ~~is not due for~~ the following year. Rumour has it that this second reactor is behind schedule.

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