

SCRAM ENERGY BULLETIN



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SCOTTISH CAMPAIGN TO RESIST THE ATOMIC MENACE, 2A AINSLIE PLACE, EDINBURGH 3. NO. 12 June/July 1979 15p

TOTALLY OPPOSED

The people of East Lothian have voted a resounding 'NO' to Torness. After two weeks of polling in the East Lothian Courier poll, first indications are that there will be a 90% 'No' vote.

The ballot was printed in the 'East Lothian Courier' on May 11th, and copies of the newspaper were completely sold out within a few days in an unprecedented rush. Extra copies of the ballot were run off, and a petition was taken round for those without a ballot to express their views. So the poll represents a full sample of local opinion, and must now force the government to rethink Torness.



★ COAL AGAINST NUCLEAR COSTS
★ SOLAR CELLS EXAMINED
★ WINDSCALE - WASTING AWAY
★ NEWS ROUND-UP
PLUS SPECIAL TWO-PAGE PICTURE
POSTER PULL-OUT ON TORNESS
GATHERING

TORNESS BALLOT		Mark 'X'
1. Are you in favour of the Torness project, as explained by the South of Scotland Electricity Board?		2%
2. Are you in favour of halting Torness, and not resuming development until satisfactory guarantees are given on safety and the environment?		8%
3. Are you totally opposed to any such development?		90%

At the time of going to press, several votes are still to come in - particularly the petitions, which are expected to be heavily anti-Torness. But initial results show less than 2% in favour of the project. 90% voted to oppose any such development and 8% voted for further investigations into safety.

98% of the public do not believe the Board's claims about safety and feel the project should be halted meantime.

This must represent a crashing defeat for the SSEB who have spent large sums of money in recent months on exhibitions and publicity. Despite all this expenditure, the public have shown that they do not believe the Board's claims about safety, jobs and the need for this station.

LOTHIAN REGION

Lothian Region have now passed a motion calling for a complete halt to

Torness until there has been a reappraisal of the whole of the present nuclear policy and its relationship to other existing fuels.

The motion, proposed by Cllr Nisbet (Labour), was passed by a decisive 29 votes to 11. It was passed instead of an earlier motion from Cllr Gorrie which merely called for a new public inquiry.

The Council's militant stance was partly caused by the Harrisburg disaster. But a councillor told SCRAM that 'the influence of the Gathering (which took place the weekend before) was enormous.'

These events add up to a massive mandate from the inhabitants of Lothian to the new Secretary of State to abandon the project meantime while investigating safety, and other possible alternatives. **WE ASK: WHAT ARE YOU GOING TO DO NOW MR YOUNGER?**

Gorleben Win



The Government of Lower Saxony in West Germany has voted to abandon plans for a nuclear reprocessing plant at Gorleben.

Mr Ernst Albrecht, Premier of Lower Saxony, announcing the decision, said the project would not go ahead because of 'political considerations'. 'As long as the public is not convinced of the need for such a plant, I cannot recommend its construction.'

If Harrisburg is a timely reminder of the malign possibilities inherent in the nuclear power industry, then Gorleben may become a rallying cry for all who wish to prevent its further development, whether at Torness or anywhere else.

The resistance to the German government's plan to create a giant

NEWS —

HOME

WINDSCALE

British Nuclear Fuels Ltd. have now admitted that the latest Windscale leak was the biggest so far.

Having originally claimed the leak involved 2,000 curies of radioactivity and was of no danger to the public, BNFL now say the figure was nearer 30,000 curies. But they say there is still 'no present or future hazard to the public or workforce.'

Radioactivity was leaking from a disused building for 2½ years before it was discovered in March. Energy Minister Tony Benn called for the next government to launch an inquiry, and said he had considered closing the entire plant down.

Now the Nuclear and Safety Executive has told BNFL to devise measures for containing or recovering the leaked waste. And they suspect that up to 100,000 curies in 2,000 gallons of liquid have escaped over the years. But they still say that there isn't...umm...any immediate danger to public or workforce.'

So one wonders why the Department of Energy told the Financial Times back on 14th April that health risks 'are still very large'.

GERMANY

Windscale isn't over popular in Germany at the moment either, where they've just discovered its radioactive waste washing up onto their beaches. The waste, it seems, travelled 500 miles up the Irish Sea, round the coast of Scotland and into the North Sea. BNFL have refused to comment on this, though an Energy Ministry spokesperson told the Guardian 'It cannot be denied'. This is something the fishing industry may have to monitor.

Portskewit reprieve

Gwent County Council may refuse to renew planning permission for the proposed 1320MW AGR at Portskewit near the Severn Bridge.

Outline permission was obtained in 1972, but the CEGB let it lapse and when they reapplied in 1978, objections were made by over 100 groups and individuals.

Monmouth District Council reversed their 1972 decision and have recommended that Gwent Co. Council reject the application.

But the new Secretary of State for Wales has now issued a directive to Gwent not to determine the application without authorisation from him. This is to enable him to consider calling in the application. It also allows him to over-rule local opinion without a public inquiry. Gwent's decision is not now expected until July.

Further details from Gloucestershire Alternatives to Nuclear Technology, 23 Lower Street, Stroud, Gloucs. or Phone Portskewit Action Group, 0291 422602.

75 ACCIDENTS IN 2 YEARS

There is now evidence of well over 75 incidents and accidents at Windscale over the period December 1976 - December 1978, most of them not reported in the press. But the worrying thing about this latest leak - apart from the radiation danger - is that the human factor - the only thing that can go wrong, remember - seems not to have been involved; apparently it was just an old pipe giving way and springing a leak.

in brief

Yet another British nuke has bitten the dust, meantime at any rate, with the closing of both reactors at Dungeness A, one for routine maintenance, the other because of cracks in the cooling system.

Number 2 reactor was closed down for maintenance last August and should have gone back into service in November or December, to leave four months before reactor No. 1 was due for inspection. But cracks up to 2 mm long and 1 mm deep were found and the CEGB cannot say when it will be possible to switch it back on.

Number 1 reactor, which may well have similar cracks, is closed for inspection and repairs and will probably be out of action until the end of the year.

One thing missed by the daily press has been that the cracks were discovered before the end of last year, and yet were not made public until May. Presumably they were waiting to make sure they weren't dangerous before revealing them. But what if they had been dangerous? Would they have told us then?

The EEC is looking for nuclear inspectors 'responsible for safeguards concerned with the use of ores and special fissile materials'. These rather vital individuals need a minimum of two A levels, or Scottish Highers Certificate. Graduates, says the advert, are not eligible.

[Guardian 12/4]

A thief has stolen X-ray equipment worth £11,000 from the Heysham nuke. Part of the machine looks like a TV set, but police say that if switched on it emits powerful radiation able to beam through concrete.

[Sun 7/5]

Firemen fought a blaze for several hours at Hunterston B on May 10th. The fire occurred outside number 4 reactor, which has been out of action for 19 months after a sea-water leak.

The Earth has enough natural gas to last for millions of years, according to Professor Gold of Cornell University.

He has said that there is far more natural gas deep in the earth's crust than anyone has expected up to now, and he expects that gas will ultimately become the world's major fuel.

The Professor believes that gas is bubbling up from the earth's centre continuously, and was formed as part of the primeval earth. This contradicts the current belief that gas was formed by the decay of organic materials. But he points out that volcanoes emit methane gas, and that gas is often found in very deep rocks well below oil and coal deposits.

The Observer refers to him as 'Professor God', so perhaps he knows what he's talking about.

[Observer 1/4]



Windscale and Calder Works.

NEWS —

INTERNATIONAL

Nuclear boycott

Spain - The Spanish dockyard workers' union has put a total boycott on the ship Covadonga, carrying a cargo of nuclear material from the US, intended for a power station being built at Lemoniz in the Basque country.

Because of the boycott, which applies to every port in the country, the freighter was diverted to Bordeaux.

But Bordeaux dockers responded to an appeal for solidarity put out by the Spanish workers and blacked the ship which was then reported to be trying Cadiz.

The Lemoniz nuclear power station is the most controversial in the Iberian peninsula - it has a million people living and working within 10 miles. The Basque people are reported to be determined to stop it, and they have support from the powerful Left-wing opposition as well as from the unions.

[Guardian 17 May]

U.S. - Former President Eisenhower reportedly told the Atomic Energy Commission in 1953 to keep the public 'confused' about radioactive fallout, according to recently declassified information. And in 1955 a Commissioner commented 'People have got to learn to live with the facts of life, and part of those facts is fallout.'

Senator Edward Kennedy, who is chair of the Senate sub-committee on Health and Scientific Research, says the AEC's successor, the Nuclear Regulatory Commission may have the same problem, and that their discussions about the Three Mile Island accident show the same sort of divided loyalty to industry and public safety as characterised the AEC.

He has called for responsibility for the health aspects of radiation to be transferred from the Department of Energy to that of Health, Education and Welfare.

[International Herald Tribune, 21/4]

U.S.S.R. - The Soviet Minister of Power and Electrification has finally admitted that nuclear accidents including leaks and an explosion have occurred in the USSR. He cited 2 accidents and 'a series of fires' without giving details. There have been reports of two explosions in one of which, in the Urals, several hundred people are thought to have been killed.

[Financial Times 24/4]

An estimated 100,000 people demonstrated against nuclear power outside the White House on May 6th.

The rally was called by a coalition of more than 200 groups ranging from FoE to the Automobile Owners Action Council. We hope to have a full eyewitness account in the next bulletin.

France - Malville committees and other groups are building an 'autonomous house' near the fast breeder reactor under construction there. The house will use sun collectors and a windmill for its energy and will act as a discussion centre.

[WISE]

Netherlands - The Dutch Friends of the Earth is running a major campaign on sun power, with exhibitions, leaflets and evening events, which will continue through the rest of the year. They have also installed a windmill on the roof of their offices in Amsterdam to produce part of their electricity.

[WISE]

Illinois - Radioactive fumes escaped from the nuke at Zion, Illinois, when 700 gallons of water spilled from a reactor cooling system. Officials said no danger to people living in the area.

Ireland - A petition has been launched against Ireland's proposed first nuclear power station at Carnsore, Co. Wexford. Local opposition to the station has mounted since it was discovered that the number of jobs for local people was liable to be only 2-300 and not 2,000 as was first believed.

Planning permission has not yet been granted, and a public inquiry is expected in about 18 months. If the petition is successful a referendum will be held.

[Guardian 14/5]

Brazil - 'Usually reliable sources' report that the nuclear programme is going to be at least halved, to 4 reactors. This is due to financial and safety considerations and because of increasing internal criticism of the programme, which is already running 5 years late. A Senate Commission of Inquiry into the programme is thought to favour a complete halt to the programme. Prominent Brazilian Kurt Mirow has said 'The long and painless process of the death of the nuclear programme has started'.

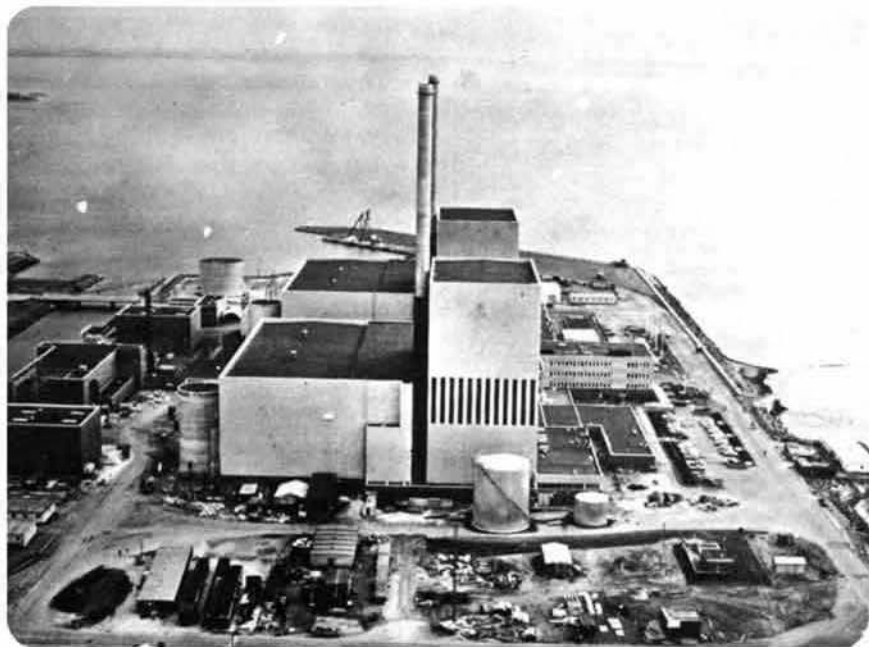
[Guardian 1/5]

Germany - A report from the German Hydrographic Institute has discovered levels of plutonium and other radioactive isotopes in the Channel and Southern North Sea are 5 - 10 times higher than can be explained than fallout from nuclear bomb tests. And, presumably, immensely higher than they would have been 50 years ago, before the bomb tests.

Reconcentration of radioactive materials in fish and shellfish, at the present time, is reported to be one of the main ways in which we absorb radiation doses into our bodies.

The radioactivity measured probably came from the reprocessing plant at La Hague in France, though Windscale waste is swimming around the area too - see the article on Windscale.

[Nature, May]



BARSEBECK nuclear power station

Denmark - 45,000 people in 15 towns demonstrated against nuclear power on April 18th, to coincide with an energy debate in parliament. Although Denmark plans to go nuclear, this has had to be postponed indefinitely because of the weight of public opinion.

And a petition of 200,000 signatures has been handed over to the government

asking them to put pressure on the Swedish authorities to close the Barseback nuke, situated only 15 miles from Copenhagen. Barseback 1 reactor has indeed already been closed down - by a fire in April, estimated to cost at least £25 million - probably until the end of the year.

[wise]

COUNTING THE COST

No less than 14 separate inquiries into the Harrisburg accident have been started to date by the US Congress, administration and the nuclear industry.

And 16 American nukes have now been closed indefinitely for safety reasons, including 8 with design faults, 5 with dubious resistance to earthquakes and 2 where accidents have already occurred. Another 14 reactors will have to close for modifications, and 27 others have acknowledged hazards which are expected to get worse unless preventative measures are taken. In other words, 57 out of the 70 nuclear power stations in America have been found to have serious faults as a result of the rethink following Harrisburg. On top of this, the Senate Environment Committee has voted to revoke the licences of all reactors in states that do not draw up satisfactory emergency evacuation plans within 6 months. This affects 41 reactors in 16 states.

The Committee toured the Three Mile Island station, and were surprised by technicians' accounts of the events, which sharply contradict the version given by the Nuclear Regulatory Commission. The NRC, apparently, knew the extent of the disaster on the very first day, and not the third as they have previously maintained.



Middletown

COVER UP

Meanwhile in Vienna in late May, a secret meeting was held between representatives of 10 leading Western countries to discuss ways of dealing with future nuclear disasters. (Which doesn't say much for their confidence in nuclear safety!). No details were given as to the discussion or even the names of the countries taking part. Nor was it explained why it was necessary to hide the meeting behind a shroud of secrecy.

The cover-up was used at Harris-



burg too, though with little success. The company's first line of 'no danger it's all under control' was very quickly shown up. Other methods included not telling the Civil Defence agencies about individual emissions of radioactivity. They didn't think it would be significant; 'If Civil Defence wants to tell people around the plant to keep their doors and windows shut, that's their prerogative', a local newspaper reported them as saying. Residents near the site were never told the reactor was critical and a meltdown possible. While radio listeners all over the world knew this, local Harrisburg stations were told just to talk of 'routine (sic) emissions of radioactivity'. This meant that rumours and counter rumours ran wild.

The moral of which is that if a nuke close to you goes wrong, don't expect to be told about it until it's so obviously dangerous that it's probably too late.

CLEAN UP

At the Three Mile Island site, the main problem at the moment is how to clean up the station. The inner containment has between 150,000-200,000 gallons of highly radioactive water which will have to be dealt with. Even more important is the large amounts of radioactive iodine and caesium-137 everywhere. Caesium-137 has a half-life of 28 years, and enough of it will remain for at least 25 years to make cleaning extremely difficult. Commented a Nuclear Regulatory Commission source; 'That stuff is all over everything, on the walls, the ceiling, the pumps, the quench tank, the flood tank. You name it, there's caesium on it'.

It will be at least a year before scientists can get inside the reactor containment to discover the extent of the damage.

Silkwood - £5m damages

The survivors of Karen Silkwood have been awarded over £5 million damages against Kerr-McGee Nuclear Corporation, her former employees, for radiation contamination.

Ms Silkwood had amassed evidence of negligence by her employees and was taking documents proving this to a journalist when her car was knocked off the road and she was killed. The documents were stolen from the car, and the other vehicle involved was never traced.

Previous to this her flat and herself had been discovered to be contaminated with plutonium. Kerr-McGee claimed she had taken the plutonium to her flat to embarrass the company and contaminated herself by accident.

But her family maintained that the company knew she was investigating negligence (it has been admitted that her phone was tapped) and engineered the contamination to discredit her. They point out that the plutonium came from a source she had no possible access to.

VICTORY

The decision represents a major victory against Kerr-McGee - who are to appeal - but American environmentalists feel there are still many unanswered questions; what safety is like within the company, why they think it might be possible for an employee to remove plutonium from the plant, who within the company was responsible for the smear campaign during her lifetime, and who - if anyone - killed Karen.

KEEP IT QUIET

The last Energy Bulletin reported that radiation risks from low level radiation exposure are now known to be much greater than was previously thought. It seems, however, that we were wrong.

Documents obtained by the Washington Post show that a US government study linking leukemia to radioactive fallout was deliberately suppressed for fear it could jeopardize atomic bomb tests.

As far back as 1959 it was discovered that children in Utah state, near the Nevada bomb test site, had leukemia 2½ times as often as children before the bomb tests, and that they had higher levels of the radioactive isotope Strontium-90 in their bones.

Despite that the government rigidly maintained that radioactive fallout and the tests caused no harm.

PARSONS CALL FOR CHP

The Corporate Union Committee of C.A. Parsons has called on the government to place orders for pilot schemes for 2 Combined Heat and Power (CHP) Stations, and have criticised the CEGB for neglecting smaller generators while going for bigger and bigger power stations.

C.A. Parsons is one of the four biggest turbine makers in the country and is centrally involved with the nuclear power industry. They are one of the two firms fighting for the vital contract to build the turbines for both Torness and Heysham.

The document, on the crisis in the Power Engineering Industry, calls for a steady series of smaller orders to keep job stability, in preference to very large occasional orders.

Steady ordering from the home market, it says, 'should certainly include the updating of existing plant through refurbishing and revitalisation of older stations'. Revitalisation 'should take the form of CHP stations for industrial and domestic use.'

They say the industry still has the technology to make small, efficient steam-turbine generators for use with the new combustion methods developed by the boiler makers.

The committee also calls for a planned National Energy Policy to co-ordinate all the energy producing industries.

There has been a steady decline in the number of orders for power engineering equipment over the last few years.

NO MORE WORK FOR WORK'S SAKE

Workers give thumbs down to undesirable projects

stuc

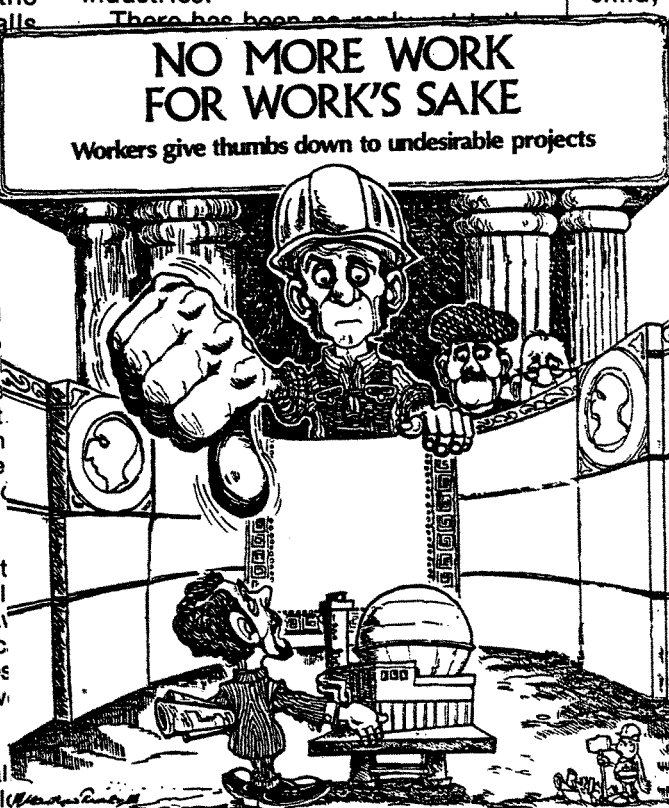
The Scottish Trades Union Congress meeting in Inverness at the end of April unanimously passed a resolution calling for 'a major review of Scottish Energy policy so that a fuller debate can take place within the trade union movement on the implications of all future energy scenarios, especially considering Scotland's resources and requirements energy and employment.'

While the section in the original motion calling for a halt to the further development of nuclear power was withdrawn, this nevertheless represents a significant shift in trade union policy, and as a result of the debate many trade unionists were made aware of the issues.

On another front, shop stewards in the power engineering industry have called for a programme of refurbishing old stations and conversion to combined heat and power generation with district heating as a way of improving energy efficiency and securing the jobs of people working in the industry who are now dependent on occasional large (nuclear) station orders.

They have also called for investment in renewable energy technologies to enable the industry to diversify. The campaign is being linked to campaigns to save older power stations (eg Kincardine) and to demands from workers in aerospace and ship building industries for work on wind and wave technologies.

The next stages of the campaign involve lobbying for shifts in individual union policies and getting the labour movement to oppose plans to build the American PWR system in Britain. The British AGR, though significantly safer, is now recognised as totally uneconomic. The campaign will also be concentrating on radiation hazards to the workforce, trade union rights, and employment implications of energy options.



area, contact SERA Energy Campaign, 9 Poland Street, London W1, 01-439 3749.

Harrisburg - Over \$1 million was paid out within 2 weeks of the Three Mile Island accident by Metropolitan-Eddison's insurer. This is merely for additional living expenses incurred by the evacuation of pregnant women and pre-school children. Other claims are still to be assessed. A melt-down would have bankrupted the US nuclear insurance system.

Metropolitan-Edison have demanded an immediate 16.5 million increase in the electricity rate which they say they will need if they are to avoid bankruptcy.

[Int. Her. Trib. 16/4 & Fin. Times 19/4]

The US government is to sponsor more research into the effects of low level radiation which is now recognised as 'a serious public health issue' according to the Secretary of the Department of Health, Education and Welfare.

[New Scientist 8/3]

CLAIMS 'incompetent'

Claims that alternative power sources could be more dangerous than nuclear power have been dismissed as 'a morass of mistakes' by Professor John Holdren of California University.

The claims stem from a report by Herbert Inhaber for the Atomic Energy Control Board of Canada. »Holdren called the report, which was used as a basis for last year's BBC Dimbleby lecture by Baron Rothschild, 'the most incompetent technical document ever circulated by the government'.

He says the report is 'highly selective in its use and misuse of data' and gives examples; it compares the risks of various ways of making electricity, including, for instance, the risk of a fatal accident while building a windmill, but omits similar risks in the building of a nuclear station! And its upper limit for reactor risks is 3 times that of the US Atomic Energy Commission's, and 200 times smaller than the figure implied in a Ford Foundation study. It also misrepresents the findings of Holden's own findings.

An attack has been made by Lord Inhaber on those who accepted the report uncritically. Speaking in the House of Lords, he asked whether 'scientists' like Baron Rothschild that were will print prominent retractions. He said the report demonstrated 'one of the key problems of the nuclear establishment - the lack of honesty and dishonesty that permeates the industry'.

sunday

The highlight of this year's campaign to publicise solar power and other energy sources derived from the sun, is International Sun Day, June 23rd.

The campaign is strongest in the U.S.A., Australia and on the Continent, where exhibitions, films, leaflets, architectural competitions and information evenings will raise public awareness of sun power and its advantages.

Conscious citizens are called to campaign for the removal of political obstacles to sun power's basic characteristics, decentralised applicability. See Diary.

SORRY FOLKS - The Cartoon came out too big!

PARSONS CALL FOR CHP - The last Paragraph should read:

"There has been no reply yet to the calls from either management or Whitehall."

STUC - The last paragraph should read:

" For further information on the campaign or help and advice on contacting the trade union movement in your area, contact SERA Energy Campaign, 9 Poland Street, London W1 (01-439-3749)."

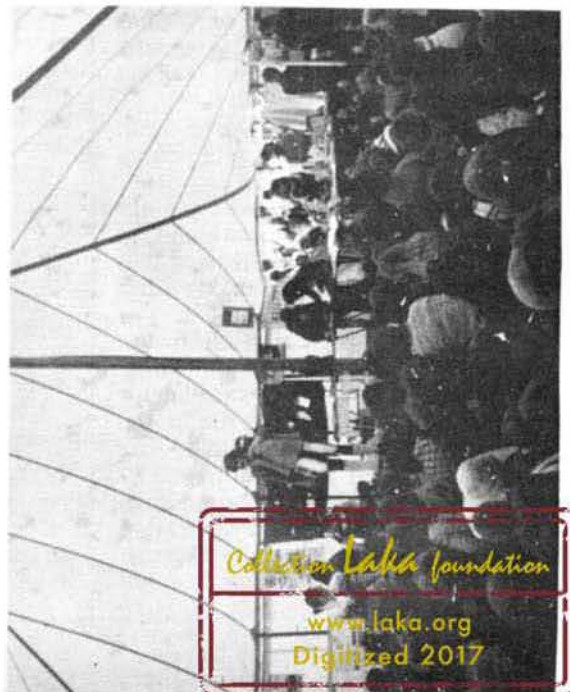
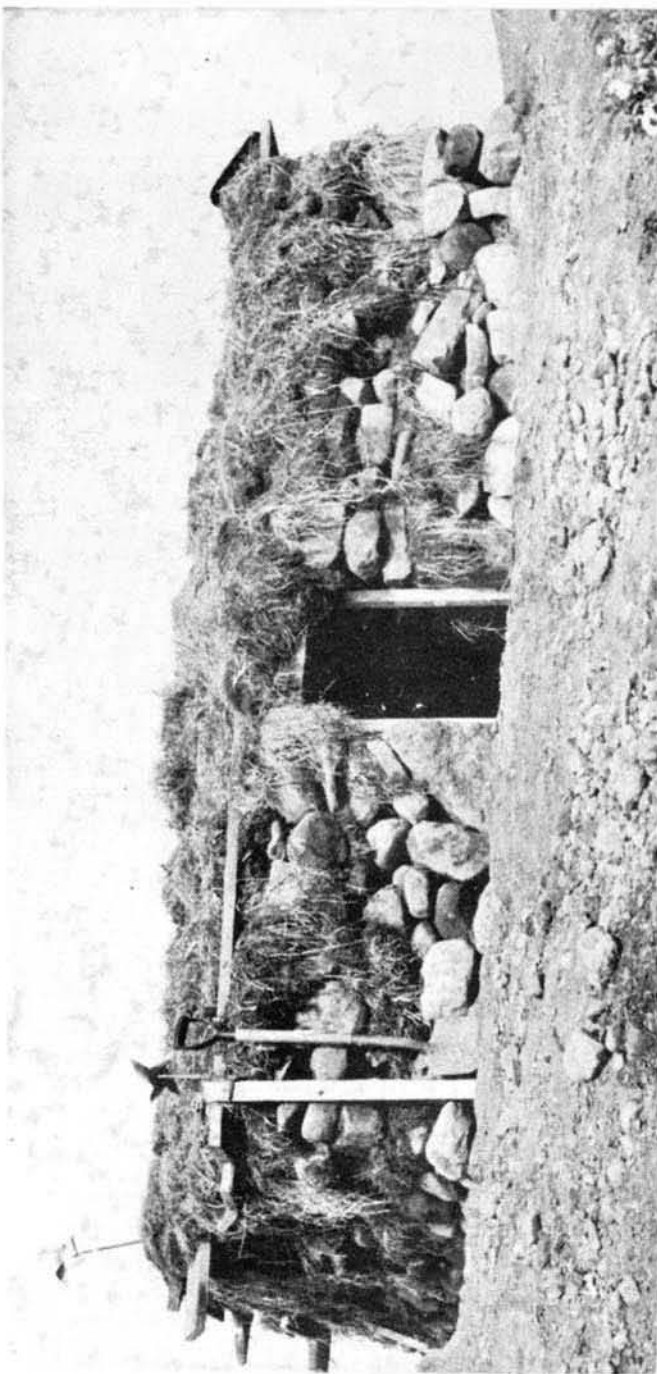
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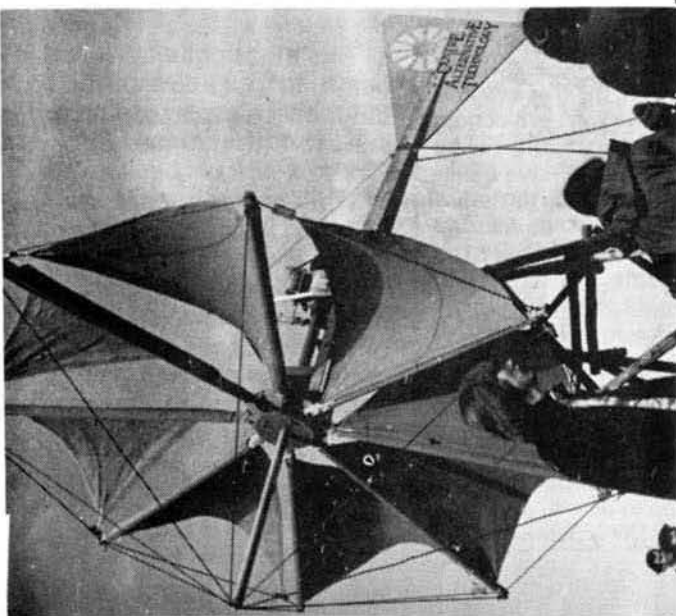
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And an attack has been made by Paul Ehrlich on those who accepted the report uncritically. Speaking in Colorado, he asked whether 'scientists like Baron Rothschild that were fooled will print prominent retractions?' He said the report demonstrates 'one of the key problems of the nuclear establishment - the stupidity and dishonesty that permeate it'. "

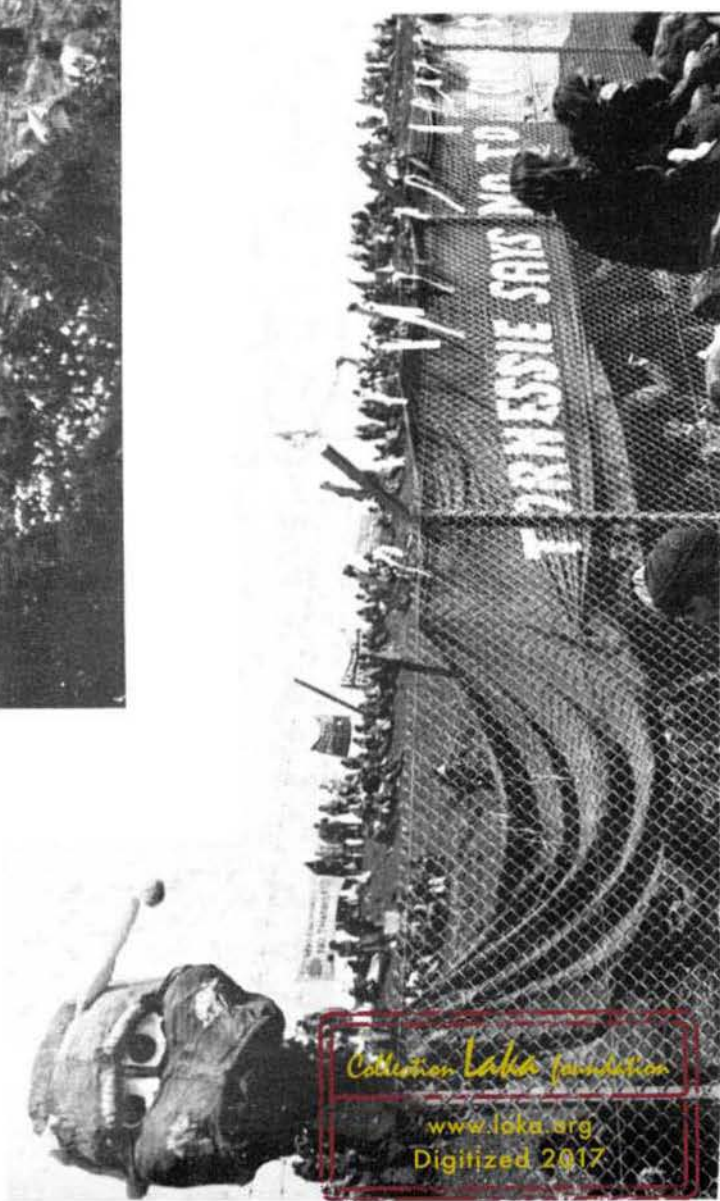
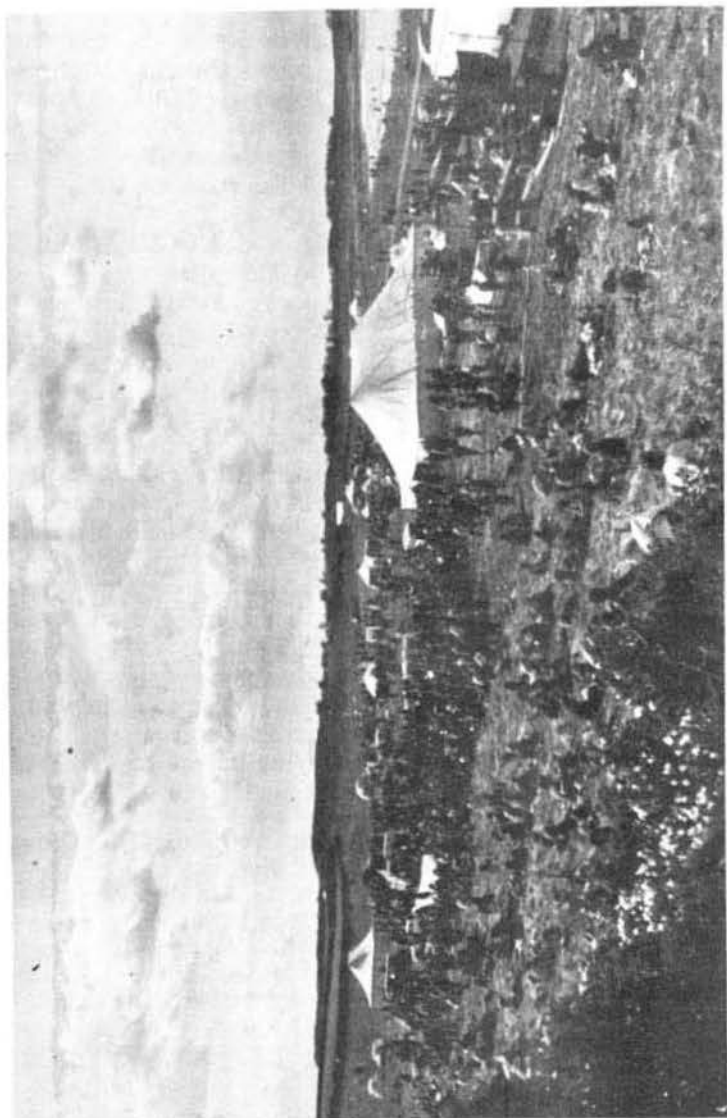


TOGETHER



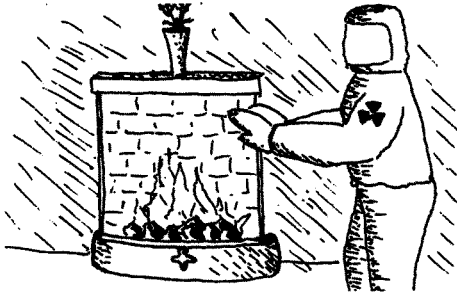
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MAY '79



CALCULATING COSTS

The economics of nuclear power are an aspect of the nuclear industry in which optimistic forecasts are more common than successful outcomes. In the mid-50s, nuclear power was predicted to be so cheap as to make meters obsolete; now it is agreed that the Magnox stations built at the time were a very expensive option compared with coal or oil units.,



Similarly, with the AGR programme of the 60s, many local councils were hoodwinked into believing tales of future cheap electricity and were led to the installation of electric heating systems. The result can be seen in the soaring heating bills of the residents of these flats. Again, in retrospect, the AGR stations can be seen as being a very bad bet compared with fossil-fuel alternatives.

REAL COSTS HIDDEN

The electricity authorities always try to hide these facts by concentrating their published figures on the fuel costs of operating plants (which are lower for nuclear plant than for coal stations). What is concealed is a growing burden of capital charges arising from the need to build capital-intensive nuclear plant as against less costly coal-plant. These figure less prominently in the accounts but are just as important in calculating the tariffs.

INTERNATIONAL STUDY

A recent study, prepared by the International Energy Agency's coal research group in London, has compared the costs of producing electricity from coal and nuclear plant using detailed estimates of generating plant and fuel costs. It compares conventional coal stations with light-water reactors, noting that these are acknowledged to be about 10% cheaper than the AGR proposed for Torness. They conclude that "at current prices, nuclear power has no competitive advantage over coal for base-load generation."

This result is derived for operation at 65% load factor which is, they suggest, the maximum likely operational capability of nuclear plant. In 1977/78, only 16% of the CEBG generating plant operated for more than 60% of the year. For plants operating below this annual load-factor, the break-even coal price, that is the coal price at which nuclear power becomes competitive with coal-generation widens to nearly 25% above present levels.

The results produced by the IEA group who are funded by ten countries, including the U.K. Dept. of Energy, suggest that nuclear power has little chance of becoming competitive with coal unless the real cost of coal rises at between 2 and 5% per year, depending upon nuclear plant costs (this is distinct from general price rises which do not alter comparative costs). Such a price rise is above that predicted by other members of the

The nuclear industry has consistently maintained the fantasy that nuclear power is cheaper than other forms of electricity.

Drawing on the work on the International Energy Agency this review for SCRAM conclusively destroys the myth and highlights the need for continued development of coal resources.

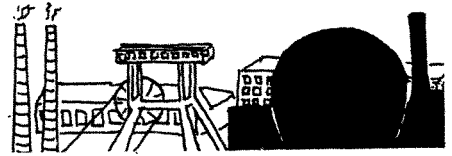
IEA group based on announced coal investment plans.

COAL IS CHEAPER

This is the heart of the comparison for, as the report suggests, the justification for the present British nuclear programme must rest upon a failure of the coal investment programme to achieve its output and productivity targets.

It is known that underneath the Forth there are large reserves of good quality coal in thick seams which should be recoverable using modern methods, at below the cost of much coal mined today. If new pits were opened up to dig this coal then there seems little doubt that new coal-fired plant, or refurbished units like Kincardine, could produce electricity cheaper than the Torness plant.

The SSEB refuses to acknowledge that its present plans are based upon the



closure of the Scottish coal industry, yet there seems no other way to analyse the consequences of their actions. If this resulted in cheaper electricity then there might be some slight justification for their attitude but the IEA work suggest that even this last fig-leaf is missing. There seems no economic basis for their plans other than an obsession with reducing reliance on coal and an inbuilt corporate momentum not to admit that the last decade has shown nuclear power to be an economic folly.

NUCLEAR ESCALATION

The IEA results emphasise how nuclear plant costs have escalated; between 1974 and 1977 alone, the physical requirements for structural steel went up by 43%, for reinforcing steel by 39% and for piping by 50%. These increases derived from safety and environmental regulations in the USA - Harrisburg has shown that even these rises were not enough to guarantee safety.

How much higher costs will have to go is not known. It is certain, for example that Torness is not a replica of previous AGR's but a substantial re-design with an accompanying increase in capital cost.

As a result the old idea of cheap nuclear power is as much a myth as ever - even though the SSEB still resurrects its image.

SCRAM - What is it?

The Scottish Campaign to Resist the Atomic Menace (SCRAM) was established at a meeting at Torness Point in East Lothian in November 1975. 'SCRAM' in nuclear jargon means to shut a reactor down in emergency. Our aims are:

1. To inform the public of the present and proposed nuclear developments, and their social, political and environmental consequences.
2. To oppose by all nonviolent means the further development of nuclear power in Scotland and elsewhere.
3. To press for a long term energy strategy based on conservation and the use of renewable resources.

"The SSEB's present plans are based on the closure of the Scottish Coal Industry"

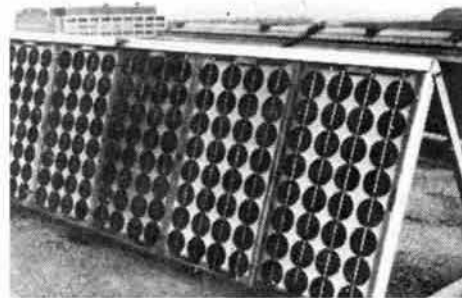
SELLING CELLS

There's a really 'up market' form of energy converter on sale, retailing electricity at £15 per peak watt, compared with the SSEB's 2.5p. It's attractively packaged, runs from a renewable resource and is ideal for decentralised use. It's called a solar cell and produces electricity directly from sunlight.

You've probably felt some of the advantages of solar cells, perhaps without realising it. Developed and widely used in the space race, solar cells met the need for a light, reliable energy converter to power the satellites in orbit, and from the beginning, the history of solar cells has been inextricably mixed with that of space technology. All those T.V. programmes relayed by satellite and much sophisticated modern communication comes to the consumer courtesy of, among others, the solar cell industry. Designed for the prestige science of sending messages into space, cost was no object, and the solar cell we have today was developed largely for this market.

Although technologists and scientists of the early 1960s may have seen space as the final frontier, with the 1970s came the shadow of a much more immediate and equally challenging hurdle.

As the Western nations slowly woke up to the realities of their worsening control of energy sources, they were forced, for the first time, to assess their energy dependence and projected supplies. For those individuals who didn't like the implications of nuclear power, the race to develop renewable energy sources compatible with society's needs had begun.



STILL COSTLY

Solar technology was brought down to earth. Based on crystalline silicon, the manufacture of solar cells is a costly high technology business. Yet corners can be cut, and the less stringent climatic

conditions on earth compared to outer space, make quite a lot of cutting possible.

A study carried out by the Open University in 1972 compared the cost of electricity produced by a traditional coal fired station with that from a hypothetical 'solar cell' station, and showed that the electricity from the solar station would cost around a hundred times as much as from the conventional station. Repeated in 1978, the study showed that solar electricity now cost 20-25 times more than conventional power. The rising cost of fossil fuels, and improved cell fabrication techniques have narrowed the gap encouragingly, but the cost is still ludicrously high.

Government energy decisions always hinge on the short term economic aspects. The immediate problem facing solar cell manufacturers is to reduce the cost dramatically. The options open to the

SOLAR CELLS turn sunshine into electricity. They are still extremely expensive but a major cost breakthrough is said to be imminent.

Fiona Riddoch is a research student into solar cells.

technologists are:

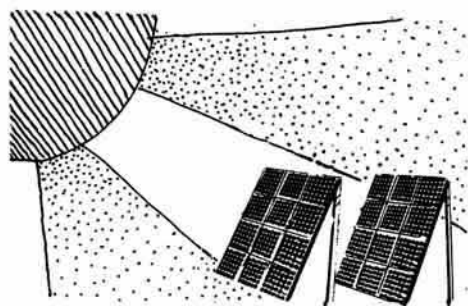
a) to increase efficiency. Current cell efficiency is at best 12-15%, and to improve this requires improving the electrical properties of the material. There are theoretical upper limits on any cell's performance, but these have not yet been reached.

b) Decrease manufacturing costs. Crystalline silicon is a costly material and requires sophisticated technology to produce in quantity. Research is now being carried out on other forms of silicon, notably amorphous and polycrystalline, to test its suitability for cell manufacture, and completely new materials with properties of interest are being investigated.

c) Reduce deployment costs. If we're talking about building solar cell power

stations, positioning and maintenance of the cells will be costly, and they will cover large areas. A problem not to be underestimated.

d) Use of additional devices; such as mirrors and lenses, are being researched as a means of increasing the energy falling on each cell and so increasing their output.



STORAGE PROBLEMS TO BE RESOLVED

Solar cells, too, have the problem of a non-uniform output. Basically this means that in Britain, which has relatively few hours of sunshine, the output from a solar cell will be less than in Mexico, for example. And, of course, at night when electricity is still needed, there is no solar output.

Adequate methods of energy storage to even out these variations in supply, and the uneven demand rates, have a vital role to play in new energy sources.

In Britain, too, we have an established national grid for electricity distribution. To the government the grid represents a large capital investment, whereas to those interested in new energy sources it too often represents a large headache. The grid is inefficient in transmission, and consumes energy. It also reinforces the planning of large centralised power stations even when, as with solar cells, the energy converter is ideal for decentralised application.

PROMISING FUTURE

This brings us to the question of who will use solar cells and how. The solar cell is ideally suited to areas with long hours of sunlight, possibly without a complex centralised distribution system, and where electricity is needed in remote areas.

Continued on Page 10

It is now generally accepted that there is no 'instant solution' to the energy problem. In this article, Fiona Riddoch takes a hard look at the problems currently besetting solar cells and investigates the historical background to their research and development,

URGENT APPROACH

In the January/February 'Resurgence' Greenman wrote:

"The party where ecology seems to be a dirty word is the Conservative Party. There is a Conservative ecology group of a little over a hundred members, run by a devoted handful of people, but they do not claim to have more than one MP converted to their cause. This is a pity as there are always Conservatives who will fight to conserve, but they have been led so long by the hard faced men - and women, for Margaret Thatcher is a prime example of this - that they appear unable to get away from the capitalist, city dominated notion that growth is everything."

If there is any truth in this statement, then every member of parliament should be approached in his/her own constituency and made to see the light and every one of them should have sheaves of letters to take to the appropriate secretaries of state to prove the wishes of the writers.

We need a nationwide approach by all sections of the community - young and old, rich and poor, in every walk of life - for nothing less will convince the government that this movement of ours is not merely a movement either of crazy conservationists or of cowardly custards afraid of their own skin.

You will notice that, in every governmental offer or promise of, for instance, a public enquiry, there are careful words whose real meaning is that no steps will be taken until the public have been sufficiently brainwashed and deluged with half-truths, evasions and downright lies to cause them to acquiesce in what the powerful, rich (with our money), and highly organised nuclear lobby had every intention of doing from the start come hell or high-water. This must be changed and this is the only way to change it. We must ensure that any public enquiry in the future is an honest and fair enquiry, and not a farce like that held at Windscale. With what patronising glee must BNFL have laughed over that one!

Let us, therefore, get cracking - nationwide. IT IS OUR ONLY HOPE. This government MUST be made, right from the beginning, to respect and support the wishes of the people it represents. Ecologically speaking, the same kind of thing is happening in other areas.

Take farming, for instance: I am a farmer, a real farmer, not one of those who exploit the land and use it for a factory floor, so I know what I'm talking about. In a recent book, 'Metabolic Diseases in Farm Animals', Jack Payne, PhD, BSc, MRCVS, says, in reference to factory farming, "Production receives priority, even though the cow dies in the process". That just about sums it up, and that is how it is with the backers of the nuclear industry. Just think about it, marshal your facts, and then ACT.

Dorothy M. Paulin

[SCRAM S.W.]

REVIEW

IS NUCLEAR POWER NECESSARY?

By Amory Lovins

The only thing wrong with this book is its title. It should have been called 'Nuclear Power is NO USE'.

Ignoring the threat that nuclear power poses to our lives, our health and freedom, Amory Lovins shows that there is no way it can ever do much towards answering our needs for energy, far less in the next few decades; and specifically that it can do next to nothing to fill the place of oil.

You don't need a computer to work that out - you could do the calculation on the back of an envelope - yet they have only recently been done, and government policy continues to ignore them.

It's a bit pricey at £1.60 for fifty pages, but the argument is lucid and compact if you can come to terms with the language an economist uses. And the book is thoroughly well referenced.

All in all, this little book makes the most compact yet coherent case I have yet seen for the futility of the nuclear programme, and provides timely ammunition to argue with a hard-nosed government for its abandonment.

Colin Hastie

'Is Nuclear Power Necessary' is published by Friends of the Earth and is available from SCRAM, price £1.80 including post and packing.

Solar Cells Contd from p.9

Many such countries are in the Third World, and in need of cheap, easily controlled energy sources. Irrigation work, telephones in remote areas and automatic communications systems are already solar powered, and while Japan, USA and the EEC are all investing heavily in solar cell research, so are India and some Middle Eastern countries.

Solar cells have a promising future in technological terms, but a word of caution. Modern western society is used to seeing only the results of science - the final technology produced as an instant wonder with no hint of the ten or twenty years of research and development which brought it into being.

HOW SOLAR CELLS WORK

Electricity is a flow of charged particles called electrons. Electrons carry energy which will do useful work; light a bulb, heat a coil of wire in a bar fire, or drive machinery etc.

Electrons can be given this energy in various ways. In a conventional power station, heat from burning fuel is used by means of a turbine and generator (the energy converters) to give the electrons energy.

There are some materials, members of a family of materials called semi conduc-

LETTER FROM AMERICA

Things are quite busy. Here in Kansas the first nuke for this state is under construction at Wolf Creek. In January, when the reactor vessel was being shipped by rail to the plant, 200-300 people demonstrated and 36 people were arrested for civil disobedience - standing on the railroad tracks to stop the train. Many of us camped out for about a week in the snow waiting for the train, as its arrival date kept changing. The past three months have been heavily involved in fundraising for the legal costs of those arrested and lawyers' fees. The case has been postponed and transferred to a higher court twice already, so it hasn't come to trial yet. But two of the defendants changed their pleas to "no contest" and were given fines substantially less than those given to people who plead "guilty" at the initial arraignment. This may well be due to recent events at Harrisburg.

June 9 we will have the third annual rally at John Redmond Reservoir, the proposed cooling water for Wolf Creek. People will be bicycling in from all over the state. (It's about 85 miles from Lawrence - lucky for us!) The nuclear Regulatory Commission (a federal supervisory-standards agency) standards for the concrete base mat for the reactor were not met - there are gaping holes in Wolf Creek's concrete, and it has been laboratory tested as substandard. The NRC is currently considering lowering its standards to allow Wolf Creek construction to continue and not require new concrete to be laid. However, after Harrisburg, I seriously doubt that the public will tolerate that.

Yours,
Barbara Mallett

tors, which are capable of producing energetic electrons simply by absorbing some of the energy in the sun's radiation. Under normal conditions these electrons rapidly lose their energy through natural processes in the material. However, under certain conditions the energetic electrons can be whisked out of the bulk and into an external circuit to form the kind of current of electricity we're all familiar with.

The 'certain conditions' referred to above are configurations of semi conductors and metals known as diodes, the same configurations which form the backbone of our present electronics industry.

The quest for new energy sources is perhaps unique in recent years in that its urgency has caught the public imagination and forced every halting experimental step into the public gaze. In all research there are many semi-successes and cul de sacs before a new technology comes of age. Solar cells have promise, but need patience and time if they are to fulfil that promise.

APPEAL

Umm...The Torness Gathering cost £5,000 to put on. Please send original Rembrandts, professional footballers, crown jewels or even money to SCRAM at Ainslie Place.

Seriously, though, we do need money to survive. Our work is dependent on your continuing help. And a very heartfelt thanks to all those who sent money as a result of the last appeal.

We need PEOPLE at the office to help with innumerable things. Open weekdays 10 a.m. - 5 p.m. (Beginners' sessions Thursday 7.30 p.m.) And we need articles for the Bulletin; write about what you're doing, what you think. Next two bulletins will hopefully have focuses on alternative energy, jobs and trade unions. (N.B. If you're writing a long article it might be an idea to contact us first in case it's already covered).

Next copydate July 16

Does your library stock the bulletin? It's important that SCRAM is available to as many people as possible. If your library can't afford to stock it you could help by buying them a sub. Cost £2 for subs from individuals.

You've read the bulletin, you've paid the money (we hope), now see the AGM! SCRAM's answer to the AGR will radiate energy from 2a Ainslie Place from 7.15 on the 25th June. Everyone welcome.

We are always keen to exchange newsletters or bulletins with other campaigns both nationally and internationally.

TORNESS ALLIANCE NEWS

The open 'follow up' meeting of the Alliance was held in York a fortnight after the Torness Gathering. The recent action was fresh in the mind so a good critical evaluation was made with errors acknowledged and lessons learned. Despite the underlying feeling against a similar 'spontaneous' mass action at the site, particularly in the near future, the groups present firmly held to a commitment to Torness as a focus for anti-nuclear work.

The general feeling was for a summer of decentralised co-ordinated actions for groups to build on local support and spread information about the hazards of the whole nuclear fuel cycle. Groups hope to support the demonstration against the Capenhurst Uranium enrichment factory near Chester on Details available from the Stop Urenco Alliance, 95 Oxford Road, Manchester 1 (061-273 2044).

On June 21 there will be an open planning meeting in Nottingham to co-ordinate local groups action days, maybe around August 6th and 9th (Hiroshima and Nagasaki days) when The China Syndrome is due to be released. The next national Torness Alliance meeting will be 21/22 or 28/29 July. Contact Darlington A.N.G., 15 Roby Street, Darlington (0325 59831).

SCRAMbling Around

SCRAM DALKEITH

Interest seems to be growing in the area at last, and we hope to have more people involved soon.

On June 23rd (International Sun Day) we will be having a stall in the town centre all day, with literature, petitions, etc. We will be doing our survey into local awareness and talking to people and answering questions. Other events are also being arranged around that day, e.g. kite-flying jamboree, painting competition organised by pupils at Dalkeith High, and in the evening there will be a fund-raising classical music concert in the Arts Centre.

An anti-nuke group has started in Loanhead (L.A.N.G.) and possibly soon one in Bonnyrigg. We are discussing the possibility of starting a newsletter to cover all Midlothian. We would like to hear from people in other areas who might be interested.

We also want to hear from anyone in this area interested in a consumer campaign against the SSEB.

Group contacts - Chris & Linda McKinnell, 35 Muirpark, Eskbank, Edinburgh 22, tel. 031-663 3327.

Midlothian District Health Council members recently voted for a motion opposing any further work at Torness on health/environmental grounds. Other support motions include a unanimous one from the Scottish Co-op's Women's Guild. And the Scottish Youth Hostels Association have voted to oppose dumping.

Local conservation groups have demanded an inquiry into proposals into the string of 166 foot high, 400,000 volt power lines which will run across Midlothian from Torness. And local landowners along their route are to refuse the SSEB permission to enter their land for surveying work.

A think-tank of leading experts to chart an alternative energy course for Scotland will meet in Edinburgh on June 8. Robin Cook MP, one of the organising group, pointed out that peak demand in Scotland this winter (on Saturday January 13, from 5 - 5.30 p.m.) of 4,400 megawatts was only just over half of the capacity 7500 MW.

The Network for Nuclear Concern has applied for funding for an energy-information project, looking particularly at energy options for North-West England. They also need financial support from individuals - details from NNC, Birk Rigg, Cowgill, Dent, Sedbergh, Cumbria.

PHOTOS

Did you take any photos of the Gathering? SCRAM is probably mounting an exhibition later this year and would dearly like to see copies of as many of your photos as you can spare - please send to th office.

from Little Black Rabbit

Two weeks ago the Scotsman newspaper printed an editorial criticising the anti-nuclear movement. Then last week they received £7,000 worth of advertising from the SSEB. No connection!

The consumer will not, of course, have to foot the damages bill for the gathering. The insurers have already paid up.

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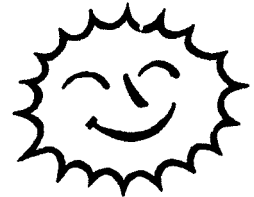
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MULWHARCHAR

One of the first acts of George Younger, the new Secretary of State for Scotland, was to announce a public inquiry against Kyle and Carrick's decision to refuse planning permission for test bores for dumping in the Galloway Hills.

Objectors are extremely annoyed that the inquiry has been announced before the expected introduction of funds to help people opposing government bodies like the UKAEA. And the Scottish Conservation Society have applied to the European Court of Human Rights in Strasbourg against Mr Younger for calling such an inquiry.

They say they have a 'good case of discrimination' to argue, based on the unequal resources of the two sides giving evidence.

They hope that the case will force the government to finance the objectors' costs.

A petition with 100,000 signatures has been sent to the Queen, and the Scottish Conservation Society has called for a Europe-wide referendum on the future of nuclear power.

Starting very shortly will be the public inquiry into Kyle and District Council's refusal to allow test bores in Carrick forest.

GORLEBEN Contd from p. 1

(and extremely costly) plant for dumping nuclear waste in subterranean salt deposits there, and reprocessing spent nuclear fuel, was non-violently and determinedly opposed, both locally and in many other parts of Germany from March 14th, the day of the first test drillings on the site. Support was sought, and given, from those opposed to nuclear power outwith Germany (including SCRAM Edinburgh).

PUBLIC OPPOSITION

Opinion polls show 61% of Germans oppose Gorleben. Soon the German politicians began to get the message, especially when in April a symposium of international experts in Hanover, in public hearings, revealed the risks involved in the project. This was despite the fact that the Bonn government, and especially Chancellor Schmidt, was devoted to the idea that nuclear power should be central to Germany's future ener-

gy policy, and that it was essential to reduce dependence on uranium imports by reprocessing nuclear fuel; and despite their airy minimisation of any health or accident risks arising from Gorleben.

The Harrisburg disaster, coinciding with the Hanover symposium, put further pressure on the Schmidt and Albrecht governments, leading to a decision on 14th May by a German cabinet committee on atomic energy to review the question of tougher safety measures in existing nuclear power plants, of which Germany at present has 14. On the 16th May the Federal government apparently capitulated and announced the reprocessing plant was not to be built; the Lower Saxony State Government has also now turned its back on reprocessing at the Gorleben monster, because they recognise its immense unpopularity, though, not because they have had a change of heart about its safety.

For your Diary

8 June: 'Rethinking Electric: An Alternative for Scotland' Symposium in Edinburgh, contributions from 12 energy specialists. Enquiries to: Centre for Human Ecology (Mrs Winter) 031-667 1011, ext. 6696 (mornings) or Information Office 031-667 1011, ext. 4254.

9 June: SCRAM Workshop in Edinburgh on Press Relations - contact SCRAM Edinburgh for details (numbers limited).

'Stop URENCO' Alliance meeting, 11 a.m. Friends Meeting House, Frodsham Street, Chester. Contact: FoE, 95 Oxford Road, Manchester M1 7DT.

10 June: Sponsored Walk on Mullwharchar Hill, Ayrshire, against nuclear test-drilling, led by Tom Weir and George Thompson. Meet at Loch Doon Castle 10 a.m. Organised by Scottish Conservation Society.

11 June: Ministers' march from Dunbar to Torness. Details from SCRAM, Edinburgh.

BBC TV 'Panorama Programme on AGRs
12 June: Lecture evening 'The Energy Debate in Denmark' by Director of Danish Institute in Edinburgh - 7.30 p.m., 3 Doune Terrace, Edinburgh.

18 June: Lecture/discussion: 'Alternative Energy - the Conservative view' by Tom King MP, 7 p.m., House of Commons, London (contact duty officer at St. Stephens entrance). Contact: Renee-Marie Croose Parry 01-584 8661/1443.

23 June: SCRAM Dalkeith organising street leafletting, concert, etc. Contact Chris McKinnell 031-663 3327.

Exhibition and Fair for International Sun Day organised by FoE, London, and N.E. London Poly at East London Poly. Mainly dealing with Solar Power. Contact: FoE, London, 01-434 1684.

25 June: SCRAM (Edinburgh) Annual General Meeting, 7.15 p.m., 2A Ainslie Place, Edinburgh. All supporters welcome.

14/15 July: 'Stop URENCO' - Public Meeting/Demonstration at Capenhurst uranium enrichment plant on Saturday, overnight camp, and direct action on Sunday. Details in Peace News 6th April or contact FoE, 95 Oxford Road, Manchester M1 7DT. (Posters for this now available.)

When in Edinburgh do as Edinburgh people do. Visit the First of May Bookshop for environmental, alternative, feminist, radical and anarchist books. 45 Niddry Street [Off High Street behind the Bridges]. Tel: 031-556 6963. Open 12 - 6 Mon - Sat.

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