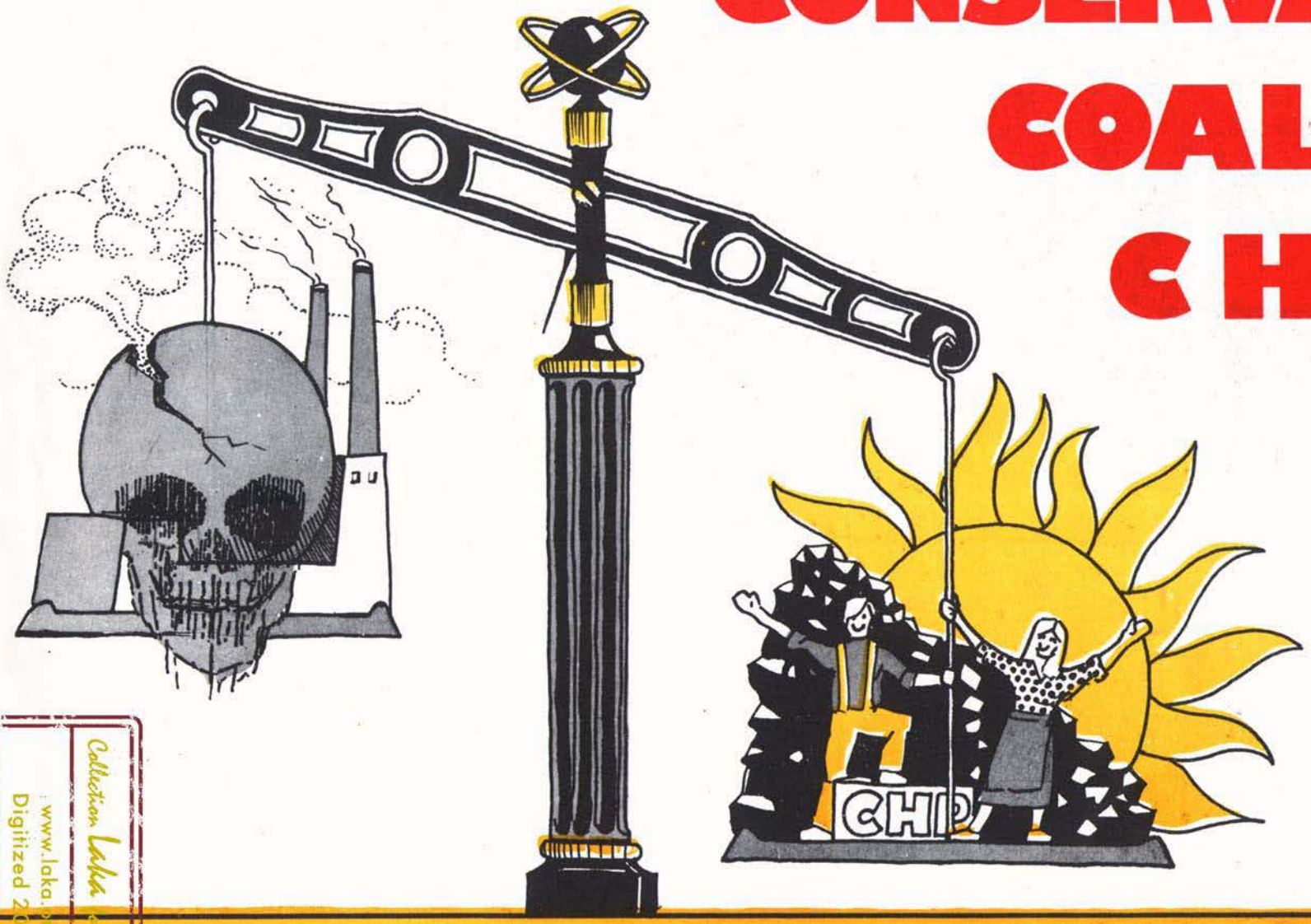
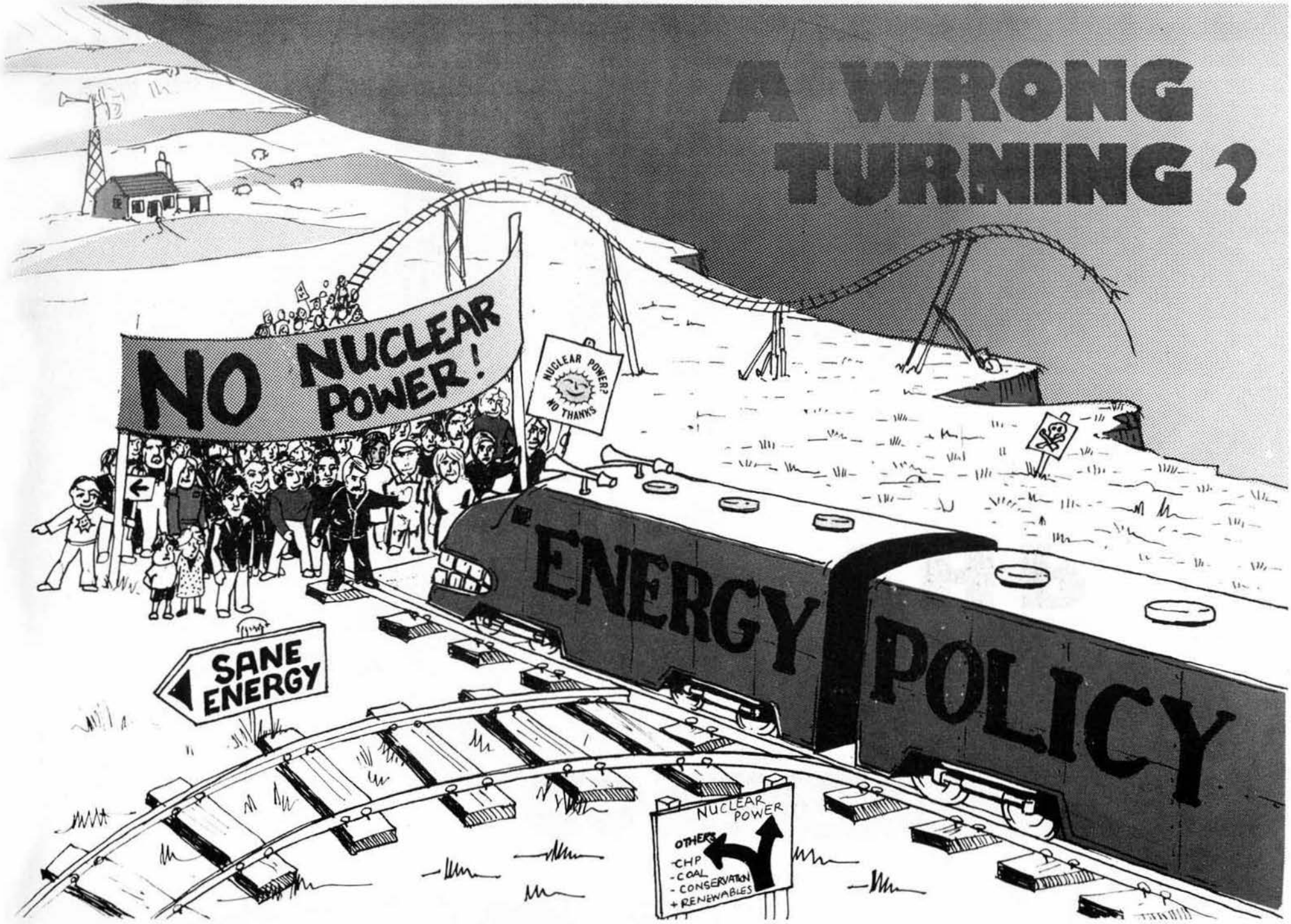
CONSERVATION COAL & CHP



only 25p

Guide to Alternatives to Nuclear Power NOW


A WRONG TURNING?
NO NUCLEAR POWER!
NUCLEAR POWER? NO THANKS
ENERGY POLICY
SANE ENERGY
NUCLEAR POWER
OTHERS
- CHP
- COAL
- CONSERVATION
+ RENEWABLES

INTRODUCTION

In factories, offices and our homes we rely on a steady supply of energy. It is the life blood of the industrialised world. In Britain today coal, oil and gas provide nearly all of our energy. These fuels will eventually become scarce. Energy must then increasingly be supplied by renewable sources from the sun, wind and waves.

PLANNING AHEAD

At one time scientists and planners thought that demand for energy would just go on multiplying. These ideas took no account of modern developments increasing efficiency and cutting demand. The latest studies suggest that our total energy use will remain constant right into next century.

NUCLEAR POWER?

For thirty years nuclear power has been promised as the solution to all problems. Literally billions have been spent on nuclear developments. And now nuclear power stations supply just 3% of our primary energy. They generate little over a tenth of electricity units consumed. But electricity only provides 13% of total end-use energy, and being a secondary source of energy is not appropriate for space and water heating – the main energy requirement.

. . . . NO USE!

For political reasons governments push for nuclear power. It promises centralised control with a small workforce. But it means an expensive, hazardous and inflexible energy source which cannot substitute for oil. And with the present 60% surplus electricity generating capacity it is not even necessary.

THE ALTERNATIVES NOW

SCRAM believes there are sound alternatives to nuclear power **now**. These include Conservation, Coal and Combined Heat and Power – all employing proven technologies using existing skills.

Public money diverted from the huge nuclear developments would fund energy conservation programmes. Insulation of existing homes, factories and offices would mean warmer and less wasteful buildings. Increased energy efficiency in transport and industry means less demand not more. For workers in the ailing power engineering and construction industries this would mean a secure future. Projects to modernise existing power stations combined with district heating schemes would create long-term employment in these sectors.

BE ACTIVE TODAY – NOT RADIOACTIVE TOMORROW

This exhibition and guide aim to illustrate the most immediate and practical alternatives to nuclear power. A diversion from the nuclear railroad will require difficult decisions at every level of our society. We hope this information will fuel these necessary changes. If you want more information please contact:–

Scottish Campaign to Resist the Atomic Menace
2A Ainslie Place, Edinburgh 3. (031-225 7752)

This exhibition was the work of many. Extensive use was made of official DoE, NCB, SSEB Reports and Publications. We especially want to thank Ian from Bentham and Frankie and Tony from SERA in London for their help with the words and John and Alex for the artwork. (& BRUM!)

SCRAM, September 1979.

CONSERVATION

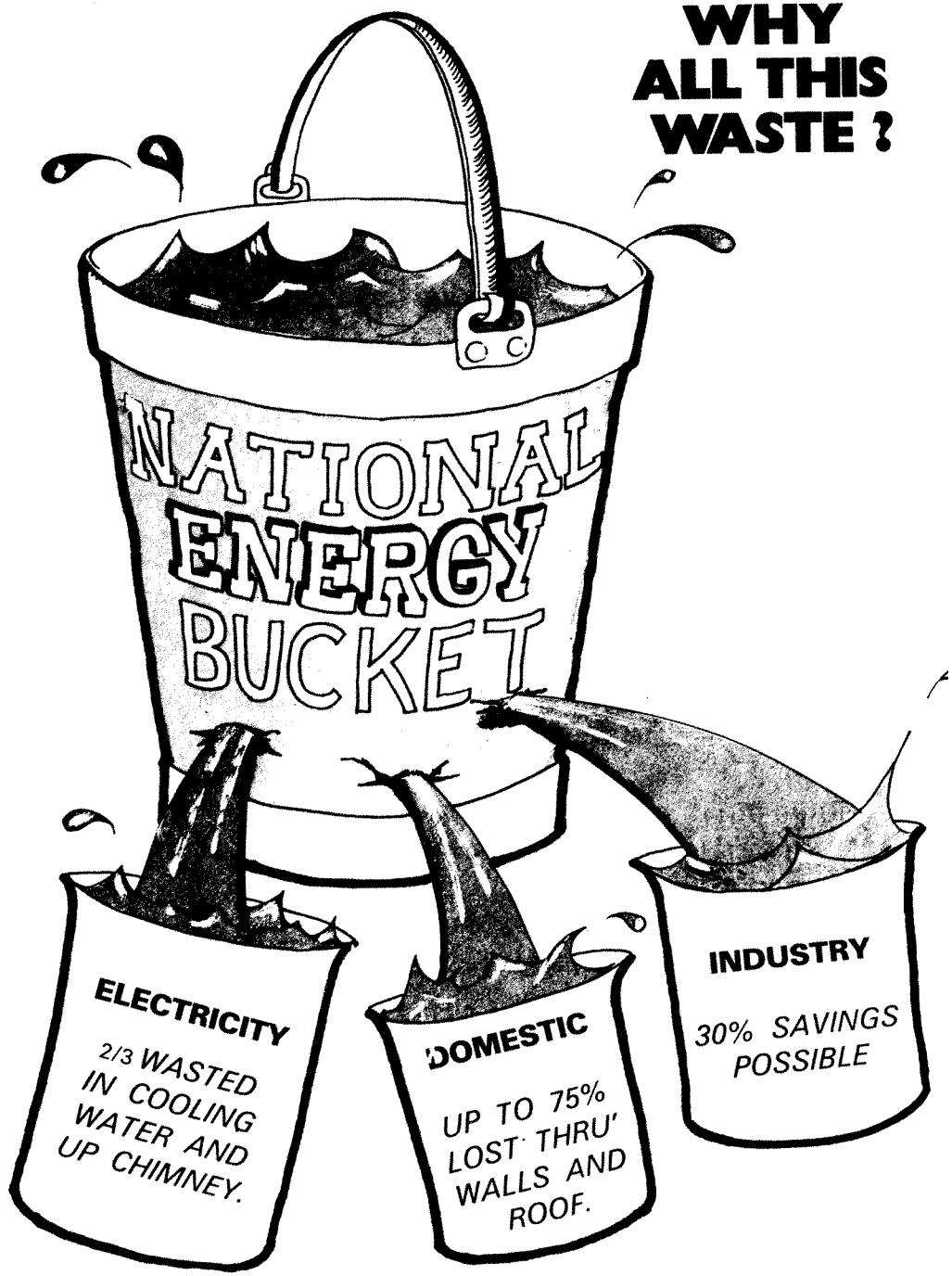
ALL AGREE THAT ENERGY CONSERVATION IS "A GOOD THING."

VERY LARGE, PERMANENT, SAVINGS ARE POSSIBLE WHICH WOULD GREATLY EXTEND THE LIFE OF OUR FOSSIL FUELS.

BRITAIN LAGS FAR BEHIND IN INSULATION STANDARDS

THE MONEY FOR TORNESS (£742m) COULD INSULATE ALL THE HOMES IN SCOTLAND

WHY ALL THIS WASTE ?



CONSERVATION

Energy in Britain is presently transported and stored in a very leaky bucket. Energy conservation will stop much of this waste. For maximum savings we should plug the largest leaks first.

POWER STATIONS – THE WORST

The biggest hole in the energy bucket is in the generation of electricity. Every year the Electricity Boards throw away the energy equivalent of 80 million tonnes of coal or the whole of the 1978 North Sea oil production. The vast majority of this wasted energy could be saved by using combined heat and power stations to heat the buildings in their neighbourhood.

By contrast today's electric heating is criminally wasteful and too expensive for many consumers.

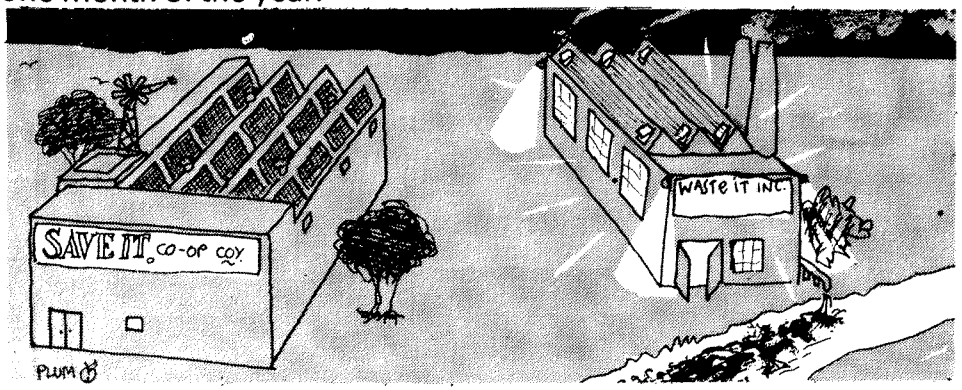
SAVINGS IN THE FACTORY

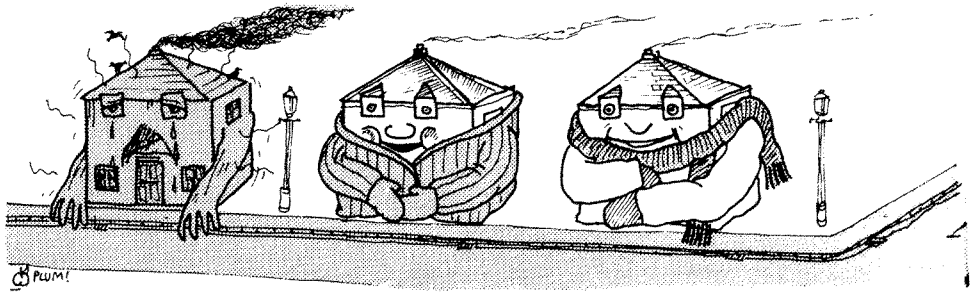
The Department of Energy estimates that with present day technology our industries could make huge energy savings – for example:

INDUSTRY	Possible Savings
Aluminium	61%
Iron & Steel	39%
Brick Making	58%
Electrical Engineering	12%

A 30% reduction in the amount of energy consumed by industry is possible giving warmer, more efficient work places with much lower running costs.

For example at their new factory in Leeds the Stationers E.J. Arnold are saving 35% on fuel bills. Ironically the Electricity Board's offices in Leeds are also so well insulated that they only need to be heated for one month of the year.





AND IN THE HOME

Energy Conservation in houses and flats benefits everyone. Better insulation and more efficient district heating means lower bills and greater comfort. But in Britain we now spend *more* on heating homes than the Scandinavians even though they have colder winters. WHY? – because insulation standards and grants for their improvement are hopelessly inadequate.

A third of our national energy consumption is in the home. Up to 75% of this is lost through our walls, roofs and floors. Draught proofing and insulation alone could save a quarter of this waste. For example Salford Council has recently built some energy saving homes. They cost just £400 more than usual but have heating bills of less than 70 pence per week.

Energy Conserving projects like this could create 1000's of jobs in the currently depressed building industry.

THE PROBLEM

There is strong agreement that conservation should be a priority – but what is really happening? The Gas, Coal, Oil & Electricity industries are all energy suppliers and they compete to supply *more energy!*

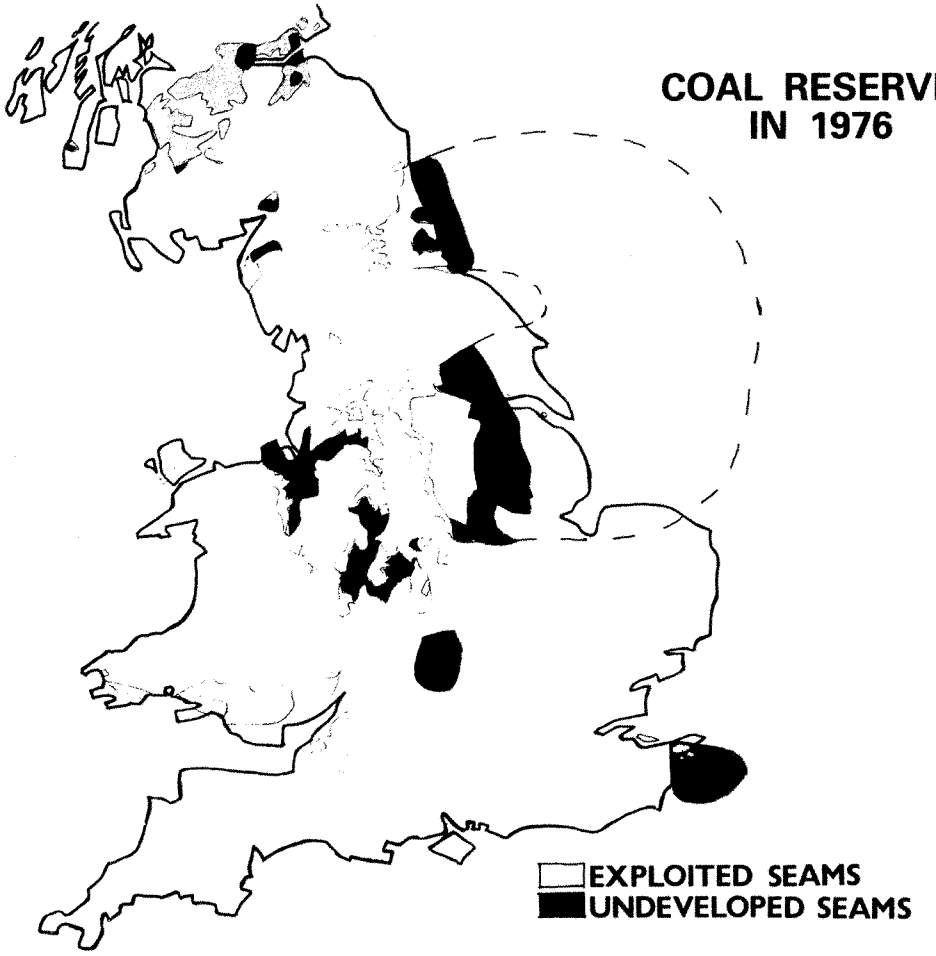
Politicians juggle with the pricing mechanisms while our scarce resources pour away through the holes in our energy bucket.

We can help ourselves by insulating our homes and demanding better energy efficiency at work. But political pressure is needed at all levels to change the emphasis from 'Think Electric' to "THINK EFFICIENCY & CONSERVATION".

INSULATE DON'T GENERATE

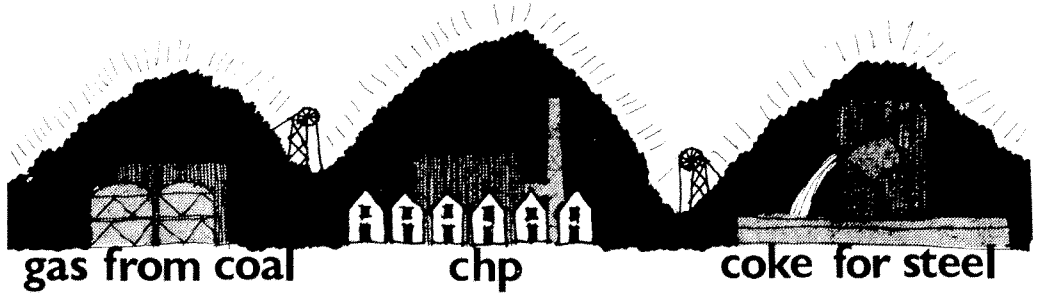
COAL

BRITAIN'S BLACK GOLD

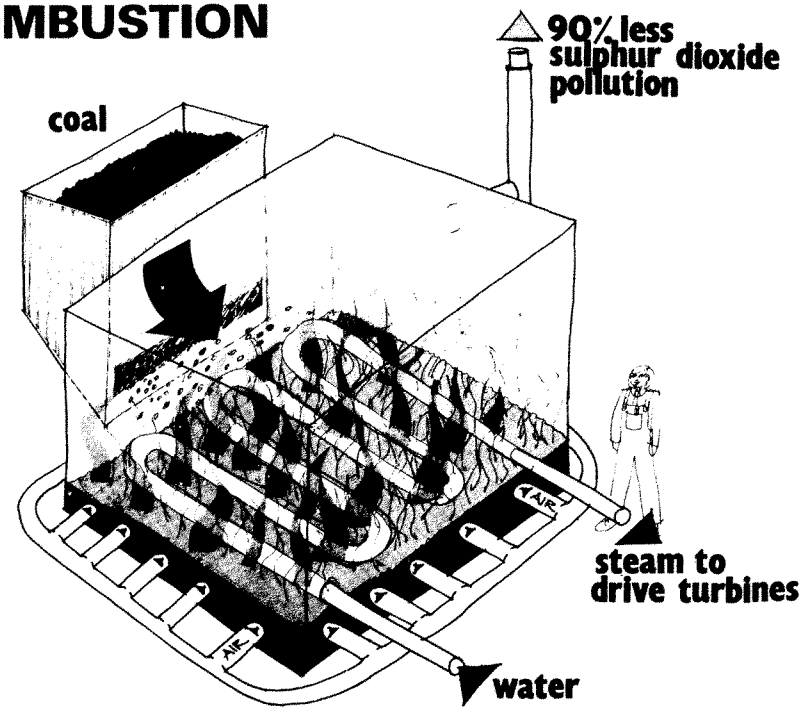


AT LEAST 350 YEARS SUPPLY
AND MORE DISCOVERED EACH YEAR

THE ADAPTABLE FUEL



FLUIDISED BED COMBUSTION



10% INCREASED EFFICIENCY WITH
DRASTIC REDUCTION IN POLLUTION

COAL

THE PRESENT USE OF COAL

The contribution of coal to U.K. energy needs has been cut by half in the last 25 years. 'Cheap' imported oil and gas have taken over in the traditional industrial and domestic markets.

Electricity generation is now by far the largest use of coal. Last year about 80 million tonnes, 75% of total NCB output, were burnt in power stations.

FUTURE POSSIBILITIES

At the present rate coal will last at least 350 years. The latest NCB survey estimates that there are 190 thousand million tonnes of 'coal in place' in the U.K. that are economic to mine. 45 thousand million tonnes could be extracted using present technology. This would be increased with advanced mining techniques.

Coal, unlike oil or gas, or uranium, could provide for a major part of our energy needs well into the next century.

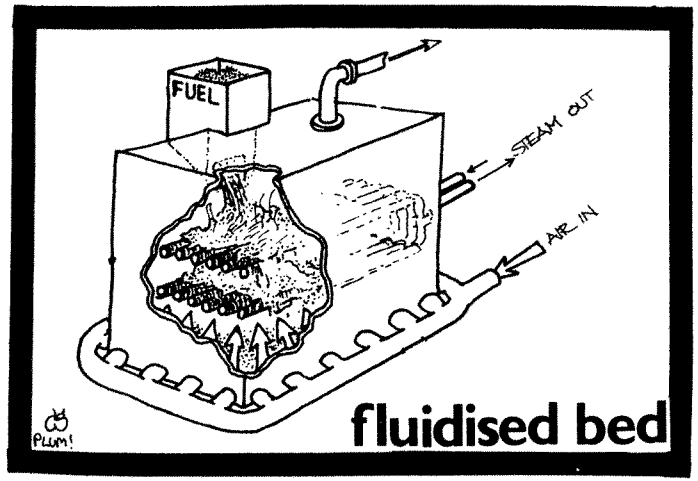
DEVELOPMENTS IN SCOTLAND

In 1974 75% of SSEB generating capacity was coal-fired. 1978 saw half all units consumed in South Scotland generated by Longannet coal-fired power station.

BUT, by the late 80's, and IF Torness Nuclear Power Station were built, coal-fired power stations would account for just 37%. They would then be relatively older and would be shut down first. Kincardine for example burns little coal because it is little used.

NEW TECHNOLOGIES

In spite of a depressing outlook for the coal industry there are promising new developments. One of these is called fluidised bed combustion. With this method of burning the old-fashioned grate is eliminated. Instead the fire is supported in a bed of hot sand made fluid by air blown up through it.The fuel burns completely and at a slightly lower temperature. A little crushed limestone is added which captures 95% of the poisonous sulphur fumes. The result is an increase of 10% efficiency with much less pollution. Very low grade coal, city refuse and industrial wastes can also be used.



A MOST VERSATILE FUEL

So coal has many uses: it is presently mainly burnt in power stations producing electricity at 30% efficiency. It can also be burnt in district heating stations or commercial boilers for space and water heating – these make up over half our energy needs.

In Combined Heat and Power (CHP) stations, using fluidised bed combustion and linked to district heating which would give massive energy savings.

Converted to coke coal is used by the steel industry.

"Town gas" was produced from coal and when North Sea Gas eventually runs out synthetic natural gas (SNG) will again be produced from coal.

Both W. Germany and South Africa have produced 'oil' from coal. Coal refineries are planned which will supply liquid fuels for transport, and chemical feedstock for the petrochemical industries.

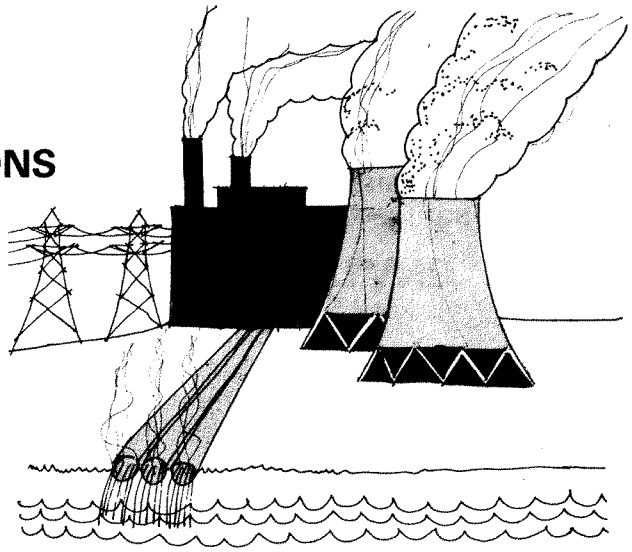
COAL CAN PROVIDE – NUCLEAR CANNOT

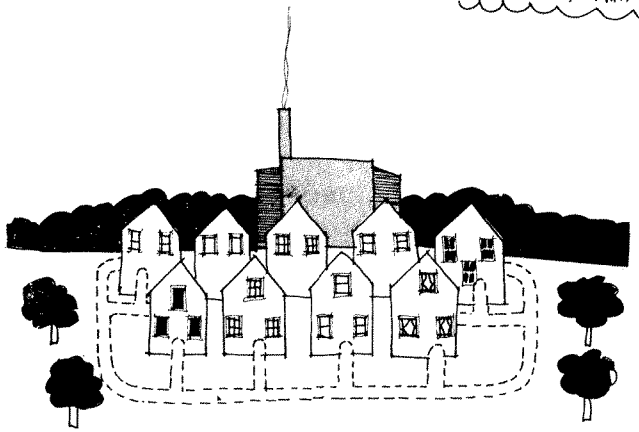
Eventually we shal have to rely on renewable sources of energy. Till then **coal** is the only fuel capable of providing for the full range of our energy needs. The fact remains however that for political reasons the hazardous and costly nuclear programme is being expanded. Concerted pressure from every sector of society is required to change national policies from the nuclear tramline. Only **you** can ensure that Britain plans for a safe and sane energy policy.

COMBINED HEAT & POWER

⅓ DENMARK'S HEATING NEEDS SUPPLIED BY CHP

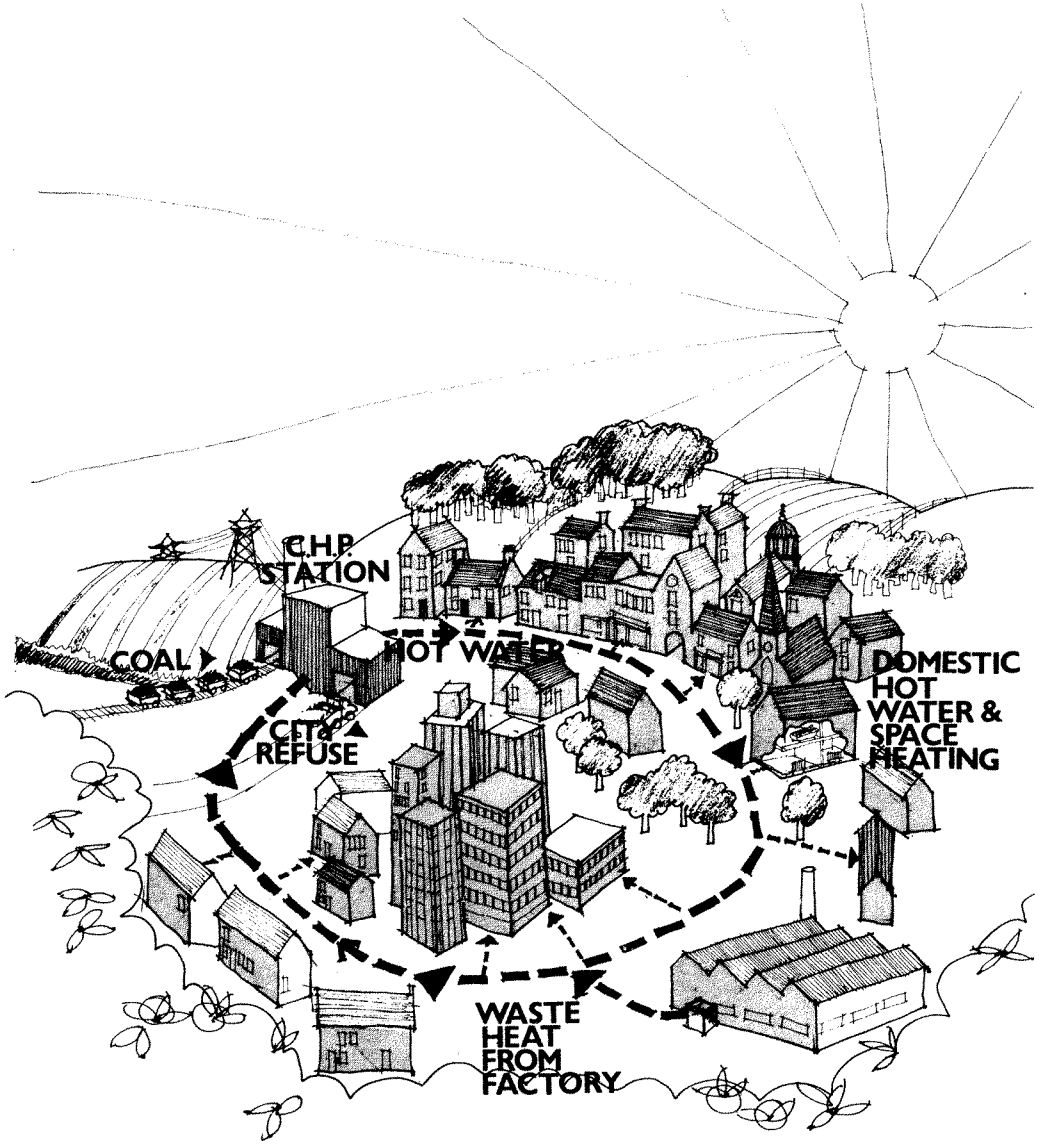
BILLIONS OF GALLONS OF HOT WATER POURED AWAY EVERY DAY....





....COULD BE USEFULLY USED GIVING DRAMATIC ENERGY SAVINGS

CHP NOW USED IN 25 COUNTRIES! WHY NOT IN BRITAIN?

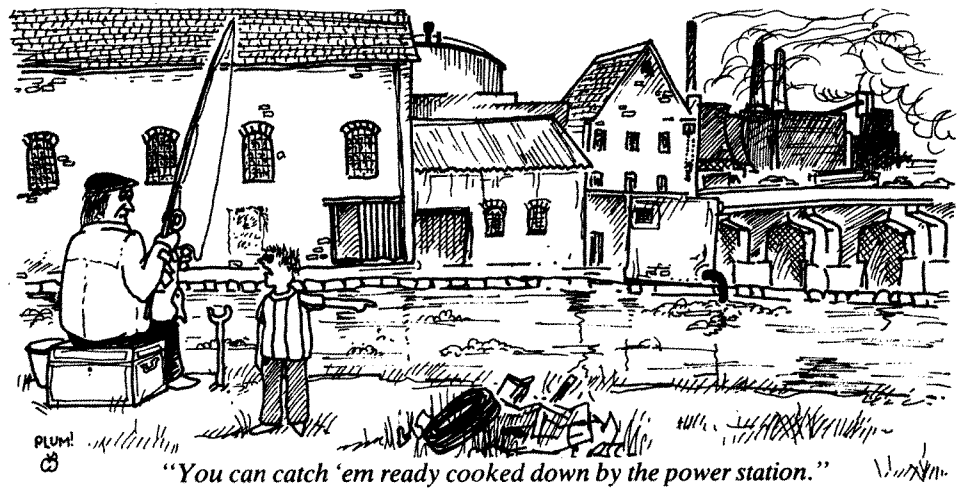


ONE PILOT STUDY PROPOSED — BUT A MAJOR PROGRAMME URGENTLY NEEDED

CHP & DISTRICT HEATING

ELECTRICITY WASTES ENERGY

Most electricity in the U.K. is produced by burning fuel in a thermal power station. The heat is used to raise steam, which drives turbines to generate electricity. Two thirds of the heat generated is thrown away in the form of cooling water. This makes electricity generation a very wasteful way to use energy as such a small part is converted into a useable form.



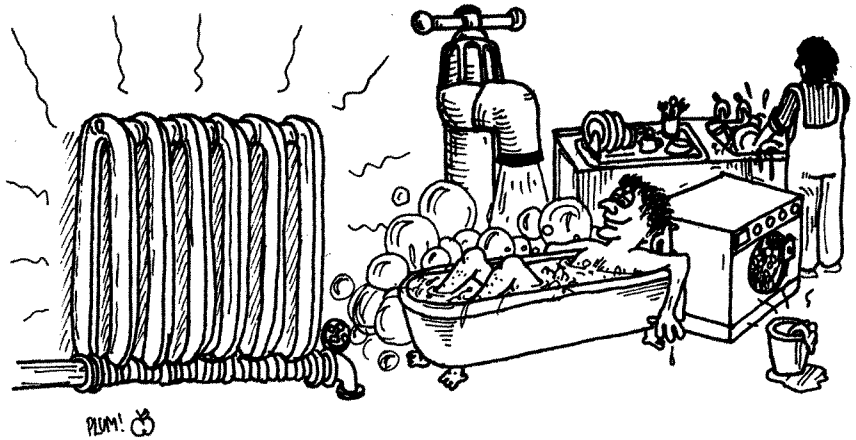
"You can catch 'em ready cooked down by the power station."

COMBINED HEAT & POWER

But we do not need to squander energy in our power stations. For example Combined Heat and Power stations linked to district heating schemes provide more than ⅓ of Denmarks heating needs. By 1982 as much as ½ of their heating will be supplied using these systems. Danish industry is also a valuable source of heat: the district scheme in Fredericia using the waste heat from the Superfos fertiliser factory saves 8000 tons of oil every year.

HOT WATER – A VALUABLE RESOURCE

In a CHP station 85% of the fuel burned produces useable energy – typically 30% as electricity and 55% as hot water. This hot water is supplied to homes and offices through insulated pipes. It is then simply connected to standard central heating systems. Over 42% of our energy needs are for space heating and hot water. Clearly a system, such as CHP, which supplies these needs directly is far more desirable than existing systems.



POTENTIAL FOR BRITAIN

In Britain most of our heat & electricity could be provided by CHP stations. Modern fluidised bed techniques would cleanly & efficiently burn coal and less conventional fuels like city refuse. Waste heat from industrial processes could also be effectively used in district heating schemes.

NEEDED: A CHP PROGRAMME

The Department of Energy in 'Energy Paper 20' states that the adoption of a CHP programme in this country would result in the creation of a large number of jobs (440,000 job years). This would mean cheap heat for our homes and factories and a reduction in the inefficient use of electricity. An energy saving of at least 30 million tonnes of coal equivalent would be made each year if just one quarter of our homes were warmed by district heating.

IN YOUR TOWN TOO!

Battersea Power Station in central London has for years heated hundreds of homes using its waste cooling water. Now, instead of modernising it with the advanced fluidised bed burners it is likely to be closed and made into a museum(!)

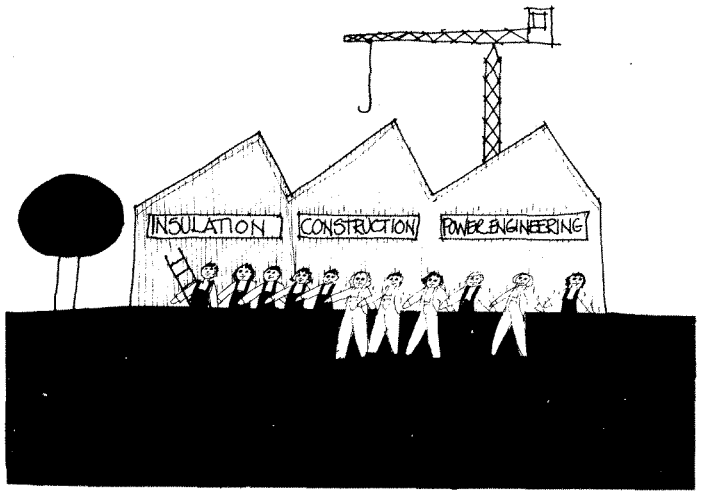
Apart from a few paper studies, there have amazingly been no moves from the generating boards to start any new schemes. However Local Authorities are also empowered to construct and run such stations. In Scandinavia, town councils and non-profit co-operations run them. Coupled with their better insulation standards this means they have warmer homes which are cheaper to run.

WHY NOT SUCH A DEVELOPMENT IN YOUR TOWN?

ENERGY AND JOBS

AN ALTERNATIVE ENERGY PROGRAMME WOULD:

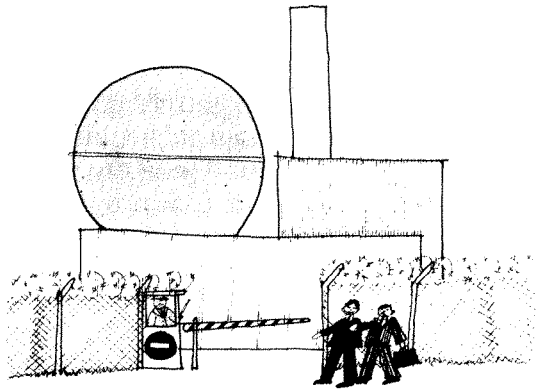
- — PROVIDE TWICE AS MANY JOBS
- — PROVIDE 50% MORE ENERGY
- — COST HALF AS MUCH AS THE PROJECTED NUCLEAR PROGRAMME



JOBS IN INDUSTRIES WHICH MOST NEED THEM

TORNESS:

CAPITAL INTENSIVE
ENERGY INTENSIVE
DRAINING
SCARCE RESOURCES



ENERGY & JOBS

AN ALTERNATIVE STRATEGY

A major commitment to an alternative energy programme would provide a large number of permanent jobs in industries which are threatened by cut backs and closures. British designers have discovered techniques such as fluidised bed combustion which if developed now would boost many of our ailing industries and provide socially useful work well into the next century.

THE NUCLEAR "OPTION"?

By contrast nuclear power creates very few permanent jobs at enormous expense. Each of the 450 – 600 jobs at Torness would require an investment of 1½ million pounds. In 1977/78 £133 million was spent on nuclear research and development. Only 2.7 million pounds was spent on research into alternative energy sources. Clearly the alternatives are being starved of funds which are vital to their development.

TEMPORARY JOBS – A SHORT TERM BENEFIT?

Nuclear power creates a considerable number of temporary construction jobs.

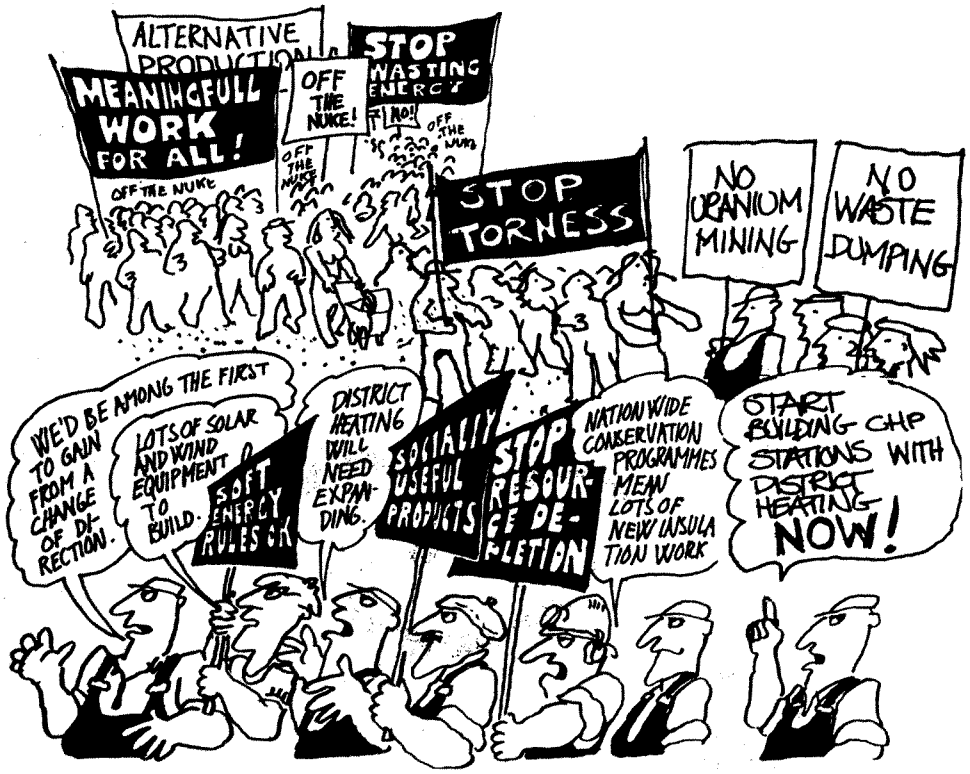
In North Wales the County Planning Officers report on the impact of constructing two large nuclear stations showed that the projects overwhelmed the communities' housing, education and social services provision and eventually resulted in higher unemployment.

Nuclear reactors are potentially so dangerous that already there is an independant armed police force to protect them. Security vetting of employees is widespread and basic trade union rights are gravely threatened.

The erosion of civil liberties and union rights can only increase if we become dependant on nuclear power.

WHAT ARE THE ALTERNATIVES?

An alternative energy programme, would, by concentrating on CHP/district heating, insulation and the introduction of solar, wind and wave power create *twice as many jobs, make available 50% more energy and cost just over half as much* as the projected nuclear programme.



WHAT INDUSTRY & UNIONS SAY

Already industry and unions involved in making generating equipment are criticising the CEGB for constructing bigger & bigger power stations. The Corporate Union Committee of C.A. Parsons in Newcastle has called upon the government to place orders for two pilot CHP schemes as well as the modernisation of the numerous smaller power stations.

Investment in smaller generating systems, with CHP, means a steady flow of orders and ensures long term employment. A modest commitment to CHP could create 400,000 job years of work to the year 2000.

The devastated ship building industry could benefit by 100,000 job years of work from orders for wave power generators. Likewise the aerospace industry could produce wind generating equipment giving another 100,000 job years of employment.

In all over 1,500,000 job years of work could be created by an alternative energy programme. By comparison the projected nuclear programme would provide up to 660,000 job years. In the light of this

WHO STANDS TO BENEFIT FROM NUCLEAR POWER?

SCRAM STANDS FOR . . .

The Scottish Campaign to Resist the Atomic Menace is an independent voluntary organisation established in 1975. In the nuclear industry, 'SCRAM' means an emergency shutdown of a nuclear reactor. 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 sources.

SCRAM carries the campaign to the general public through talks, exhibitions, film shows, the media and by peaceful demonstrations. It also publishes the bi-monthly **SCRAM Energy Bulletin,** a magazine for the anti-nuclear movement in Britain.

- **Learn more about nuclear power. Discuss the implications with friends, relatives and daily contacts.**
- **Make your views known to your elected representatives.**
- **Subscribe to the SCRAM Energy Bulletin and send a donation, however small, to SCRAM. Support your local group.**

SCRAM

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BETTER ACTIVE TODAY THAN RADIOACTIVE TOMORROW