

SIX MONTHS after an all-out nuclear war in which more than 500 warheads are exploded, the northern hemisphere would be devastated. A freezing dense cloud of radioactive smog and smoke would hang in the upper atmosphere blocking off natural sunlight. Temperatures would drop below freezing and plant and animal life would die.

The 15-20m people in Britain who might have survived would be homeless and starving, fighting each other for the little food and shelter that remained.

That is the stark picture portrayed by those who support the theory of nuclear winter. It is the basis of last week's BBC2 showings of *Threads* and *On the Eighth Day*. The theory remains to be proved, but it is gaining currency among scientists and nuclear disarmers alike. A definitive assessment of the nuclear winter theory is expected late next year when the Scientific Commission on Problems of the Environment - a non-partisan body including scientists from East and West - is expected to report.

But already the nuclear winter hypothesis is causing considerable debate among those responsible for civil defence in this country. It is generally agreed that we do not do enough either to protect people from nuclear attack or to address the problems that will arise from radioactive fall-out, refugees and the millions of dead and injured.

Britain, currently allocates about £80m a year to civil defence. This is twice as much as four years ago but it is still dismissed as a "farce" by the Campaign for Nuclear Disarmament.

A winter to end all seasons

Ivan Tyrrell, the Brighton-based author of *The Survival Option*, published in 1982 by Jonathan Cape before the nuclear winter theory gained circulation, still argues for more determined planning of public shelters and measures by individuals to protect themselves. The nuclear winter is "just scientists playing with computer models," he says. "Previously we were told we were going to fry from ultraviolet rays. "It doesn't change the basis of my argument that mankind should still struggle. You should try to stay alive until you're dead. You don't give up."

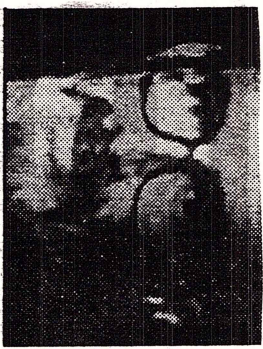
"The only way out would be to build an underground space station down some deep mine shaft for a few selected survivors who would probably have to live out the rest of their lives there. It's just not practical - and you'd probably get the generals and politicians who got us into this mess in the first place. If you fancy the idea of everyone dead except Chernobyl in one hole and Reagan in another, well, it's up to you..."

Erlich, his wife, Dr Ann Erlich (an expert in population extinctions), and Richard Turco, one of the team that produced the first comprehensive American nuclear winter study, are to visit Britain in November on a 10-day tour of local authorities and universities, meeting MPs and church leaders. Erlich is contemptuous of civil defence in a nuclear winter.

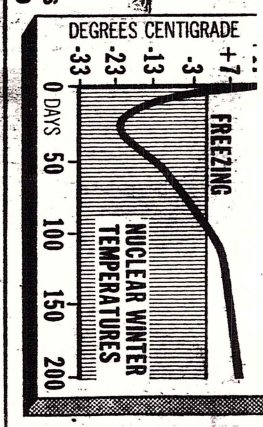
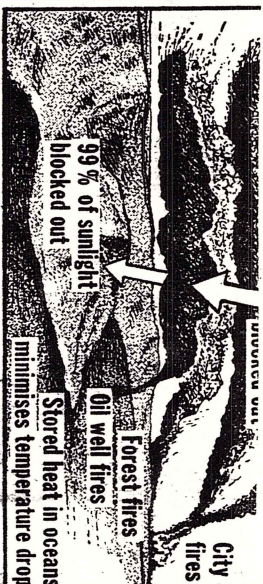
political controversy. Out of 800 local councils, 134 have refused to co-operate and have declared themselves nuclear-free zones. The government has issued new orders for councils to update their civil defence programmes. A new civil defence adviser to police recalcitrant councils takes up his post next week.



James Adams



Erlich (top) and Aleksandrov (bottom), American and Russian scientists, concur on the principle of a nuclear winter. The diagrams show some US predictions on how it could happen and how the northern hemisphere would freeze.



The money is for a wartime broadcasting service, communications equipment and a nationwide alarm system to warn of incoming missiles and radioactive fallout. The most costly item is maintenance of 17 emergency centres around the country which are hardened against nuclear attack and will house 110 civil servants and specialists who will look after those that are left: 1,870 people chosen to survive out of a population of 56m is not exactly reassuring for those of us not on the list.

Somehow unexpectedly, the Home Office insists it has made no models to predict casualties following a nuclear strike. It is difficult to see how any serious planning can be done.

The government has made no realistic provision for hardened shelters, unlike most other Nato countries, and very few people are actually trained in civil defence. There are plans to recruit 350,000 volunteers and local authorities have been asked to propose buildings or structures such as railway tunnels that could easily be converted into hardened shelters, with government paying most or even all of the conversion cost.

A government booklet on Great Britain off the map.

Flexible response is less drastic; it envisages a gradual escalation beginning with a single warning shot and going through exchanges of ever-increasing numbers of missiles. At each step up the nuclear ladder, there is a chance to negotiate and limit damage. Thus the transition from conventional warfare to nuclear need not be total devastation - perhaps only one city might suffer the blast. In these circumstances, civil defence might have a real role. This is why the government has been increasing cash and resources available for civil defence.

The issue is embroiled in

But even the mildest of nuclear winter models spells biological disaster, says Professor Paul Erlich of Stanford University in California. "A

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Survival Times

EFFECTS