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Dismantling the firebreak

RESEARCH and development of tactical nuclear weapons has been conducted for many years now with relatively little public debate against a background of even less public information. So it would be unfortunate if the recent revelation of budgetary proposals for 'enhanced radiation' devices to be built by the US Energy Research and Development Administration were to be seen only as a step, and maybe not a very big one at that, towards a new type of weapon. For the whole question of tactical nuclear weapons, regardless of their mixture of blast and radiation content, deserves a much wider airing.

Tactical nuclear weapons have yields of the order of tons rather than the kilotons or megatons of strategic devices. They can be fired from tanks as shells; and as miniaturisation proceeds they are more easily adapted to mortars or even suitcases. Enhanced-radiation/reduced-blast tactical devices would carry the added attraction for the field commander that the area bombarded would not be so devastated and full of radioactive debris as to be inaccessible subsequently to his own troops. So an enhanced radiation device would be ideal for land battles where territorial advantage counted.

Not so ideal, however, is the way recent developments in nuclear weapons have been closing the gap between

conventional explosives and strategic nuclear weapons. Until the late 1960s there was a very clear firebreak between the limited damage that chemistry could inflict and the devastation that physics could wreak. Soldiers could be entrusted with conventional weapons, but only presidents could launch nuclear devices. Then to bridge this gap came tactical weapons that were scaled down strategic weapons.

Now the talk is of devices that cause even less damage but kill more, and they are beginning to look distinctly like biological weapons. Advocates of the new devices still see firebreaks to prevent a limited confrontation from escalating into an all-out nuclear war, but this is a very optimistic point of view and assumes that belligerents will recognise each other's devices for what they are, have no wish to respond more aggressively and have the right weapons available to permit response in kind. It's a tenuous line of argument to say the least, and many will find it totally unconvincing.

In the past 25 years an immense amount of thought has been devoted to the possibilities of restricting strategic armaments. The need now is for some equally intensive studies to be made of ways of averting the escalation which new weapons technology is making progressively more likely. □

Dissecting the crisis

RECENTLY the European Commission, the EEC's administrative-cum-executive arm, sponsored a colloquium in Brussels entitled 'Crisis of science in European societies?' Everyone who attended seemed to take it for granted that the answer to the question is 'yes'. But though that may be right, the crisis borne of the modern problems of the bomb, the environment, energy, resources and changing social attitudes has been around for some years now. And crises, like lost tempers, should be over quickly if they are not outward signs of something more serious.

The Brussels symposium could hardly have been said to have come to grips with this deeper problem, beyond revealing that there are different opinions and judgments about what should be done. For some this may be suf-

ficient—a symbolic meeting of cultures, an agreeable renewal of old friendships, may be all they sought from such a meeting. They might even see it as pretentious to claim that gatherings like these could go further, though just such hopes were being entertained.

But there is meanwhile a real and deepening problem for many scientists. It involves falling funds, less research and fewer researchers. And it highlights what is perhaps the most serious problem to be faced: that scientists, unlike most other discernible groups, do not seem able to organise themselves to talk plainly to governments. Nor for that matter does the decision-making system encourage such organisation. Amiable gatherings in Brussels are a poor substitute for hard talking nearer home. □