

cancelled) and then on *Polaris* missiles carried in British-built submarines. Now, with both the submarines and the rockets which they carry nearing the end of their useful life, the British government is doing what must now seem natural, and is planning to follow the United States in replacing *Polaris* by its more powerful (and accurate) successor, *Trident*.

The whole sorry tale should be an object lesson, and a warning, to other states flirting with the notion that they, too, might become second or third-rank nuclear powers. It should also help to moderate some of the more alarmist notions of how easily nuclear weapons might proliferate. For nobody believes that the cost of this still incomplete system will be contained within the £6,000 million (spread over fifteen years) that the Ministry of Defence is talking about. The argument that the total cost will be, in any case, only three per cent of the British defence budget over the fifteen-year construction period is hardly what matters — the cost works out at seven per cent of the likely equipment budget over that period. This prospect chimes ironically with the British government's decision to put several relatively new items of defence equipment on the secondhand market — the aircraft carrier *Invincible* is for example being sold at cost to Australia, while the Indian government is hoping to pick up an Antarctic research vessel (see *Nature* 25 February, p.640). Yet the cost of the British weapons programme, blessed by the Bermuda agreement, is undoubtedly far less than would be entailed by complete independence — as French taxpayers should be well aware.

The cost of being a serious nuclear power, even a small one, is onerous. The British government's domestic critics (who, on this issue, include a great many of its natural supporters and even one field-marshal) have made several telling points. Conventional defences will be weakened just when they need to be reinforced. The cost of *Trident* could better be spent on more creative projects. And now, for the first time since 1958, there is a risk that bi-partisan agreement that Britain should have some kind of nuclear defence force will disappear. No doubt each of these complaints carries some weight. The surprise, however, is that the argument between the British government and its critics has been confined to more or less tactical questions. Would cruise missiles be a better buy than *Trident*? (The answer is maybe.) Would the same expenditure on conventional forces contribute more to the defence of Western Europe? (Almost certainly yes.) The curious aspect of the row about *Trident*, however, is that so little is being done to clarify the reasons for and against the retention of an independent nuclear force of any kind.

In the 1950s, it was different. The decision then to develop an independent nuclear force stimulated a vigorous and informative argument. Serious opinion was split three ways. At one extreme were the unilateral disarmers, whose residual legates seem now more anxious to prevent the siting of United States nuclear weapons in Britain than to re-examine British nuclear policy as a whole. Then, in the 1950s, what might be called liberal military opinion argued that British nuclear weapons might have a useful role in an escalating European conflict. The government view, which prevailed and has since stuck, was that an independent British nuclear force would help to cement the commitment of the United States to its European alliances, for it would be easier to stand aside from a conventional than from a nuclear conflict. Diplomatically, of course, the argument was never put so directly, for that would have invited the United States Congress to refuse to sanction the technical assistance with which the British nuclear force was built. Now, for what it is worth, the British case appears subtly to have changed. Last weekend, the Secretary of State for Defence, Mr John Nott, was arguing in a television interview that the *Trident* force, like and with its French equivalent, would come into its own if the pattern of alliances in Western Europe changed, leaving both France and Britain to look after their own defence.

This argument is essentially the same as the Gallois doctrine in the 1950s to justify the French nuclear force. To defend itself with nuclear weapons, a state merely has to equip itself with the means of inflicting damage on a potential enemy proportional to its own value as a prize. The argument is persuasive, but it conceals a serious danger — its universal applicability. If French and British

nuclear forces are justified in this way, why not Swiss or Swedish? The practical answer may be that at this late stage in the development of nuclear technology, the entry fee would be too high. But nobody can be sure. And if the British government is indeed edging round to planning for a world in which the pattern of European alliances may have radically changed, should it not now be talking to the French government, which must share the long-term interest that Europe should not become a collection of supposedly independent nuclear powers. And, by the same test, there is much to be said for going as slowly as possible with *Trident*, for the sake of all the money that may then be saved.

Chemical inspections

British proposals for verifying a chemical weapons treaty should be taken seriously.

The abiding trouble with arms control is that there is so much talk about it. Even if the apparently endless negotiations in Vienna on Mutually Balanced Force Reductions are forgotten (which is probably the most appropriate course), there are at present no fewer than four settings for serious discussions on the subject: the European Security Conference in Madrid (made necessary by the Helsinki agreements), the superpower talks in Geneva on European nuclear weapons, the standing Committee on Disarmament now also meeting in Geneva and the labyrinthine preparations for the United Nations session on disarmament, planned for June. Of these, however, only the two Geneva meetings are for the time being serious, and the United States and the Soviet Union have so far kept to their agreement not to broadcast news of what is going on. This is why it is refreshing that something sensible is happening at the other meeting in Geneva, that of the Committee on Disarmament.

The British government, often pilloried (as in the preceding account of its nuclear weapons policy), last week startled the Committee on Disarmament by tackling head-on one of the most difficult of the technical problems impeding the negotiation of a treaty to get rid of chemical weapons — that of verification. The problem is by now all too familiar. The agents potentially usable as chemical weapons can be made in manufacturing plants which are indistinguishable from those outside from the used for making pacific chemicals of various kinds. Although chemical munitions plants are by convention usually sited far away from civilian populations, there is no reason why their isolation should be ostentatious. The result is that remote surveillance, from satellites for example, cannot reliably indicate whether a state that has signed a treaty to dismantle its stocks of chemical weapons and to refrain from making more is actually keeping to the rules.

The British view, put forward last week, is that a sufficient degree of assurance against violations of a treaty could be provided by a judicious use of an expert committee, the monitoring of the flow of chemical raw materials through chemical processes, a complaints procedure and the judicious use of on-site inspection. Nobody can at this stage guess how the proposal will be received. The Soviet Union is notoriously sensitive about proposals for on-site inspection, but is not the only manufacturer of chemicals that is also touchy about its sovereignty. Sooner or later, however, on-site inspection is going to have to be a component of arms control agreements — and was, two years ago, accepted by all the nuclear powers to be a necessary part of the test-ban treaty then in draft. So the British government deserves encouragement for having raised the issue again. And it deserves some credit for trying to breathe life into an arms control project that has been too long forgotten since the superpower talks on the subject broke down in 1980. For this is eminently a field in which all potential parties to future conflicts would gain from an agreement not to manufacture weapons whose military value is as much in doubt as that of chemical weapons, whose production, maintenance and occasional disposal is a constant threat to the domestic population and whose agreed abolition would rid the world of a great nuisance and a needless cost.