

Nuclear restraint is the difficult test

India's recent nuclear tests are a reminder that, despite recent progress in arms control, nuclear weapons remain a threat to humanity. Helping to prevent their use requires redoubled effort by the scientific community.

It took only a few seconds for the father of the US atomic bomb, Robert Oppenheimer, to confront the implications of his actions. "Now I am become death, the destroyer of worlds," he famously observed, when the first device was detonated above the New Mexico desert on 16 July 1945. But it took almost 20 years before the concerns of atomic scientists at the potential destructive force of their science — concerns that crystallized into a powerful movement against nuclear proliferation and atomic testing — saw their first political fruits in the partial Test Ban Treaty of 1963.

Ironically in the light of recent events, Oppenheimer was quoting from the Hindu scriptures. The Indian nuclear tests of 11 and 13 May this year have few redeeming features. In themselves, they will not give India the international status it craves, nor will they do anything to encourage the five established nuclear powers to disarm. The best that can be hoped for in the circumstances is that Pakistan's security is assured by its allies, and that peace holds until both India and Pakistan are brought into global treaties that will ultimately diminish their dependence on nuclear weapons.

This process will require the United States, Russia, China, France and Britain belatedly to adhere to their own treaty commitments and take genuinely significant steps to cut their nuclear stockpiles. Meanwhile, scientists associated either directly or indirectly with the development of the Indian bomb should take advantage of their current prestige, and press their government to behave responsibly. Initial bellicose comments last week about Indian intentions in Kashmir indicate just how difficult that will be.

Caveat investor

British Biotech's problems underline the need for scientific literacy in the stock market.

It is easy — perhaps too easy — to be cynical about the recent difficulties at British Biotech (see page 299). Those who have seen their shares in the flagship company fall to a quarter of their 1996 values in recent months — largely as a result of delays in obtaining regulatory approval for the anti-pancreatitis drug zacutax — will take little comfort from being told that they are merely learning the hard way of the volatility of biotechnology stocks. It is a lesson already familiar to US investors, who saw many similar stories in the early 1990s.

Nor is there much consolation in the departure of the company's founder and chief executive, Keith McCullagh. The move will assuage those investors who feel that McCullagh has been somewhat economical with the truth about the prospects for zacutax; it will certainly bring satisfaction to the company's former director of clinical research, Andrew Millar, who was sacked last month for giving his own, unauthorized, assessments to shareholders, which differed sharply from those of his boss. But it has done little for the credibility of Britain's biotechnology industry, on which its future investment prospects depend.

On the positive side, the whole affair shows that at least part of the

Indian politicians are not unique in their adulation of nuclear weapons. In the United States, advocates of the Comprehensive Test Ban Treaty (CTBT) remain locked in battle with those whose basic instincts lean towards attaining nuclear superiority. Until two weeks ago, treaty opponents were arguing that ratification of the treaty was of no urgency, and could wait for a decade or so while US scientists figured out how to keep bombs working without testing them. Now, these opponents claim that the treaty — which India has not signed — is discredited.

The main concern of such opponents is their refusal to accept that foreign governments will adhere to treaty obligations. This point of view may have served the United States well during the Cold War. But it is insufficient for the security challenges of the coming century. On 10 June, Madeleine Albright, the US Secretary of State, will deliver a major address in Washington DC on arms control. Despite widespread nervousness about the Indian tests, these only add to the case for the treaty, and it is to be hoped that Albright will use the speech to press for its immediate ratification.

US scientists should support the administration in this endeavour, and then press for the deep cuts in nuclear weapons stockpiles advocated last June by the National Academy of Sciences (see *Nature* 387, 752; 1997). In India, nuclear scientists should capitalize on their new prestige in a bid to persuade their political masters to behave in a responsible fashion that, it is to be hoped, will now include signing up to the CTBT. Having been heroes for a day, they will discover that nuclear restraint is harder to achieve than nuclear criticality. □

regulatory system is working well. The European Medicines Evaluation Agency seems to have been properly cautious in judging the company's clinical data to be an insufficient basis for recommending regulatory approval of zacutax. It remains to be seen how the London Stock Exchange and the US Securities and Exchange Commission handle allegations that directors sold shares before investors had been provided with bad news about the prospects for the anti-cancer drug batimastat, whose clinical trials were suspended in 1995.

If there is a silver lining, it is the way the affair has emphasized the need for greater scientific literacy in the investment community (just as, three weeks ago, media frenzy over the potential anticancer drugs angiostatin and endostatin carried a similar message for patients). With few proven products to its name, the biotech industry — like the travelling doctors of the nineteenth century — can only trade on hope. It is perhaps inevitable that the boundary between hope and hype frequently becomes blurred. Millar is to be thanked for highlighting how easily it can break down, and policing the boundary remains an important task. But in the end, *caveat investor* must remain the soundest advice. □