

Cautionary tales

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EACH generation is condemned to grapple anew with the possibilities and perils of splitting the atom and destroying humanity. Assuming a predicted “nuclear renaissance” survives the economic downturn, will nuclear power one day be so developed that it fulfils its promise by helping to save the planet from climate-change disaster? Can the other sort of apocalypse be more safely averted by “getting to zero”, banning the bomb even as knowledge to build it spreads?

Illustration by Daniel Pudles



Nuclear debates are seldom well-informed, whether on the streets, in the media or in cabinet rooms. Scientists use off-putting jargon. Politicians do not bother to know enough to ask the right questions. Stephanie Cooke, an American writer, has done them all a favour. Her command of the diplomatic detail is just occasionally less sure (for example, the Start-2 arms-cutting treaty between America and Russia never actually came into effect). But this is an otherwise highly readable tale of the atom’s problems and possibilities, blending the author’s scientific and technical fluency with the human stories, achievements and doubts of those who built the bomb, and those who later hoped to tap the civilian benefits of nuclear power. What emerges is a cycle of expectation, breakthrough, mishap and false promises. Unless better understood, it is in danger of being repeated.

Only the few who had worked on the Manhattan project truly understood the implications of their fearsome creation, as they raced to beat Nazi Germany to the bomb. Even then, some looked for silver linings in the mushroom clouds from Hiroshima and Nagasaki that brought the

second world war to a halt. Such weapons must surely mean an end to all war, some thought, and the advent of peace.

It did not turn out that way. The secrets of the bomb started leaking virtually from the outset, as they continue to do today. Safeguards could anyway never be watertight. Indeed, those who rest their hopes today on technical fixes to get safely to a nuclear-free world are the wrong sort of dreamers. Meanwhile, proposals for international control of the atom, including a fuel bank, an idea suddenly back in vogue, fell victim to competition, suspicion and, between America and the Soviet Union at least, an emerging cold war.

The expectation of electricity “too cheap to meter” brought hopes in some quarters of an end to world poverty. Yet nuclear power proved costly and far from risk-free. Some presumed that by the turn of the 20th century there could be more than 500 fast-breeder reactors, fuelled by expanding stockpiles of plutonium. By the millennium’s end not a single fast-breeder was in commercial operation (the necessary experimental forerunners produce plutonium in quantities useful for bomb-making). The Bush administration’s Global Nuclear Energy Partnership sought to revive the breeder idea (renaming it a fast-burner), but plans had to be shrunk due to cost, technological complexity and the danger of proliferation.

Whatever the nuclear technology used, the by-products thus far have been accidents (Three Mile Island and Chernobyl were among the worst but there have been plenty of others), pollution and piles of nuclear waste. Meanwhile technologies and materials acquired to keep the lights on can be misused in weapons.

Spread around generously in the 1950s and 1960s, “atoms for peace” helped get Argentina, Brazil, India, Israel, Pakistan, South Africa, South Korea, Taiwan and others started in the bomb business. (Other secretive programmes—in Iran, Libya, North Korea—thrived mostly on black-market connections.) Now, once again, nuclear suppliers are signing up governments with nuclear ambitions, arguing that co-operation will help ensure the technology is put to proper use. But history suggests that no one can be sure where all this will lead.