

BOOKS & ARTS

A man of peace

One scientist's journey from the Manhattan Project to the Nobel Peace Prize.

Joseph Rotblat: Visionary for Peace

edited by Reiner Braun, Robert Hinde, David Krieger, Harold Kroto & Sally Milne
Wiley: 2007. 371 pp. \$45, £27.50

War and Peace: The Life and Work of Sir Joseph Rotblat

edited by Peter Rowlands & Vincent Attwood
University of Liverpool: 2006. 338 pp. £15

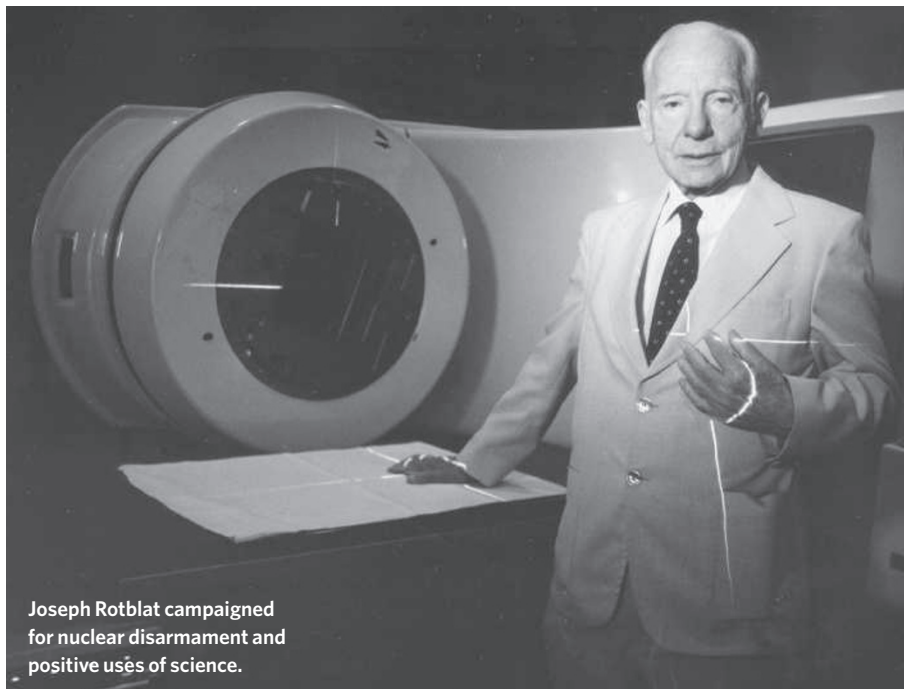
Malcolm Dando

Joseph Rotblat, when receiving the honorary degree of Doctor of Science from Bradford University in 1973, described the ongoing build-up of nuclear arms and the underlying doctrine of deterrence: "This doctrine of deterrence is known under the name of mutual assured destruction: M.A.D. It is indeed a mad system in which survival depends on the threat of total annihilation."

Such a system, he believed, was bound to fail sooner or later and so he advocated an alternative: "One in which our survival is based on mutual incentives, on the recognition of the ever-growing interdependence of all members of society all over the world, on the utilization of the vast potential of technology to build and sustain a clean and healthy world."

The two books reviewed here, *Joseph Rotblat: Visionary for Peace* and *War and Peace: The Life and Work of Sir Joseph Rotblat*, celebrate the achievements of the nuclear physicist, who died in 2005 aged 96 (*Nature* **437**, 634; 2005). For much of his long life, Joseph Rotblat advanced the argument that nuclear deterrence was extremely dangerous, but that there were positive alternative uses of our science and technology. Yet rejection of the doctrine of deterrence had not always been Rotblat's position. As one of the first scientists to realize that atomic bombs of incredible destructiveness were possible because of advances in our understanding of physics, he felt it was necessary to develop such bombs in order to deter Hitlerite Germany from using them, should it develop that capability. Thus, he became a member of the Manhattan Project in the United States and went to work at Los Alamos. However, when he realized that Germany could not develop the bomb, he left and returned to the United Kingdom.

Today, life scientists increasingly face the dual-use dilemma that physicists had to confront in the middle of the last century. It is



Joseph Rotblat campaigned for nuclear disarmament and positive uses of science.

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becoming ever clearer that the vast new capabilities being generated by the biotechnology revolution for beneficial reasons could also be used for extremely destructive, hostile purposes. As Sir Joseph indicated in his lecture 'Citizenship and the Challenge of Science' in March 2002: "We already know about advances in biological warfare whereby gene manipulation could change some pathogens into terrifyingly virulent agents. But entirely different mechanisms might be developed. We cannot predict the destructive potential of military applications. All we can say is that the danger is real."

Despite the growing attention directed at the potential misuse of benignly intended life-science research by states parties to the Biological and Toxin Weapons Convention and the Chemical Weapons Convention, few practising life scientists have grasped the nature of the problem, let alone considered what might be done to prevent the large-scale hostile use of their technology in future decades.

These two fascinating sets of essays would be a good place for life scientists to begin considering their dual-use problem and what might best be done about it. *War and Peace* is based on a conference held at Liverpool University, UK, in October 2006. It was to the Physics Department of Liverpool University that Rot-

blat moved, from Poland, just before the start of the Second World War, tragically having to leave his sick wife behind. The book contains essays from numerous people who knew him well and casts many different lights on his life: his early career in Poland; his work in Liverpool and then in medical physics at St Bartholomew's Hospital, London; and his decades of work as a campaigner for peace and cooperation. I particularly liked the archivist's story of carrying away some three tonnes of papers from Rotblat's home to the University of Bath, UK, for cataloguing. Rotblat's few 'faults' included an inability to throw away any records.

There is some overlap between this book and *Visionary for Peace*, but the latter deals to a greater extent with Rotblat's international activities for nuclear disarmament and peaceful cooperation, for which he and his creation, the Pugwash Conferences on Science and World Affairs, jointly received the Nobel Peace Prize in 1995. Mikhail Gorbachev, for example, recalls how he came to know Rotblat personally in the 1990s and how, at meetings of Nobel Peace Prize-winners, Rotblat's contribution to discussions of nuclear disarmament was invaluable because he was "the best qualified and perhaps the most passionate participant". Gorbachev also noted that as the 1990s progressed, "concern and alarm in our discussions

became more and more prominent". He concluded: "We should not delude ourselves: in the final analysis, the problem can only be solved through the abolition of nuclear weapons. So long as they continue to exist, the danger will be with us."

Rotblat would certainly have agreed, and *Visionary for Peace* has a useful appendix of a set of his writings, which include his 2003 paper, 'The Nuclear Issue: Pugwash and the Bush Policies'. This contains a typically incisive condemnation of the recent lurch to yet more reliance on nuclear weapons in the Western world: "The use of nuclear weapons is seen by the great majority of people in the world as immoral, due to their indiscriminate nature and unprecedented power. Their possession — and therefore likely use — is thus equally unacceptable, whether by 'rogue' or benevolent regimes." Little wonder then that Pugwash scientists have argued against the replacement of Trident by the United Kingdom.

Few of us are able to achieve a mature balance between our many activities and diverse relationships. Yet, despite his hectic work schedule, Joseph Rotblat was universally regarded as an exceptionally kind and generous person. His wife and her mother died in the Holocaust but members of the family joined him in England after the war. An essay by his niece, Halina Sand, demonstrates his humanity so well: "His warmth and kindness to me continued throughout his life, descending through the generations to my two daughters and their children. In his mid-nineties, and in poor health, he was still able to charm his small great-great-niece and twin great-great-nephews, just as he had once enthralled their mother and their grandmother." Joseph Rotblat was indeed a man of peace. ■

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Too much information

Glut: Mastering Information Through the Ages

by Alex Wright

Joseph Henry Press: 2007. 296 pp. £16.99, \$27.95

Ann Blair

'Information overload' is a phenomenon we know well — a Google search on the term retrieves close to 2 million hits. But is it really as new as we think? "We are not the first generation — nor even the first species — to wrestle with the problem of information overload," Alex Wright reminds us in his ambitious new book, *Glut*. He seeks a balanced and historically informed assessment of the digital revolution's impact. As a former librarian now working as an information architect, Wright combines insights from his areas of expertise with a wide range of historical and scientific literature aimed at non-specialist audiences. He does not attempt a synthesis of specialist

debate, but offers a well-informed account of information management across a surprising range of examples.

Information management systems, which typically rely on a combination of self-organizing networks and hierarchical relationships, are central to biological phenomena — from the evolution of multicellular organisms to the dynamics of social insects. Wright draws from sociobiology the suggestion that evolution has favoured the development of particular human cognitive behaviours in managing information, such as the drive to classify and the emotional attachment to symbols. He turns for confirmation to anthropologist Donald Brown's notion of human universals and notes the particular importance of the ice age that began some 40,000 years ago in forcing humans to interact more closely, thus stimulating the development of drawing and symbolic objects. Wright argues that this "ice age information explosion brought humanity to the brink of literacy".

The book's central chapters follow a more conventional selection of examples spanning the development of Western civilization: from the origins of writing in Mesopotamia for keeping commerce and administration records, to the accumulation of books and bibliographic records (at Alexandria, for example), through the Dark Ages in which Irish scribes worked alone outside traditional hierarchies (like today's bloggers, Wright suggests), and into the age of print in the Renaissance.

The author discusses some high points of early modern information management. For example, Giulio Camillo's memory theatre (around 1550) promised access to all knowledge through a system of visual mnemonic cues; in 1751, the *Encyclopédie* of Diderot and d'Alembert established the modern norm for the encyclopaedia as an alphabetized, multi-author, multivolume and illustrated reference work; and at about the same time, Carl Linnaeus devised a precise set of rules for classification in nature. Wright pays special attention to the methods for classifying books between the late seventeenth and early twentieth centuries, which culminated in the development of multi-tiered, expandable hierarchies of standardized headings, such as Melvil Dewey's decimal classification in the late nineteenth century. He points out that libraries and librarians have long been at the forefront of information management techniques.

Finally, Wright considers twentieth-century attempts to form a universal collection of retrievable information, many of which are now forgotten, although their original ambitions are partially realized in the World Wide Web. Paul Otlet, for example, was a Belgian bibliographer who dreamed of guiding users not just to the right books, but to their contents. His *Mundaneum* (1910) eventually consisted of more than 12 million facts kept on index cards to which users could submit queries for a fee. The American engineer Vannevar Bush envisioned a machine called the 'memex', which would retrieve information to match a query from texts stored on microfilm. Although Bush's article 'As we may think' (*Atlantic Monthly*, 1945) is considered seminal today, Wright notes how little current information science



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Many information management techniques were first developed in libraries, where hierarchical classification methods have existed for centuries.