

RUTH OLDENZIEL and MIKAEL HÅRD, *Consumers, Tinkerers, Rebels: The People Who Shaped Europe*. Basingstoke: Palgrave, 2013. Pp. 440. ISBN 978-0-230-30801-5. £65.00 (hardback). doi:10.1017/S0007087415000862

A woman uses a box cutter to shape a dress template from a reused paper pattern. She leans forward and so is shown in profile, with her pearl earring and elaborate hairstyle foregrounded against a wall-mounted radiator. This cover is a clever prologue to the key themes of this fascinating volume. By conceptualizing paper patterns as tools, the authors reframe the photograph as an image showing a technology user in the act of appropriating tools for her own ends; tinkering with different technologies in a way that is of central concern to Oldenziel and Hård. Moreover, the image highlights aspects of life in Europe that have otherwise remained hidden. Fashion, furniture, food, travel, trains and toys are just some examples that feature in this wide analysis of twentieth-century users and consumers of technology.

The book is split chronologically into three sections. It begins at the end of the nineteenth century, then moves on to consider the effect of the First World War, and finally explores the 1960s as a crucial epoch in user empowerment. However, these three sections are also linked thematically through their emphasis on users. Oldenziel and Hård thereby cover a much longer tradition of use and consumption through engaging with the dialogues and intimate relationships present between producers and consumers. The relationships and variations between user appropriations of technology in different countries are also held up for comparison. For example, the US is shown to create mass markets for commodities that originated through product innovations in Europe. In this way, the book adds to the literature on technology and users by considering various technologies through a wide-ranging European perspective. User appropriation is situated in its political and cultural context, providing a history of the twentieth century that highlights the experiences of ordinary people, with a myriad of primary sources utilized to this end. The book is sumptuously illustrated with the aforementioned paper patterns as well as excerpts from fashion magazines, advertisements, maps, travel guides, user manuals and photos.

The photos show people engaged in the act of tinkering – women in Kent preserving food through home canning, young Parisians with individually embroidered jeans. These images work to starkly illustrate and reinforce the authors' message in visual terms. In the chapter 'Bicycling and driving Europe', an image captioned 'Sidelined' shows hundreds of bikes forced together onto a narrow path alongside a road stretching into the distance with just a single car. Thus the author's point about how urban planning for the perceived future did not reflect the reality of use is vividly demonstrated. As well as photography, contemporary literature is also used to provide a picture of how technology was integrated into the everyday lives of people from all classes. Throughout 'Creating European comfort', excerpts from Anton Chekhov's *Peasants* and Leo Tolstoy's *Anna Karenina* are used to situate the reader within different social classes in nineteenth-century Russia.

Class is also integral to the discussion of train travel prior to the First World War, as evidenced in 'Crossing borders – in style?'. This chapter argues that the need for division between the classes heavily influenced carriage design. Those interested specifically in the history of train technology may feel that this argument 'railroads' the influence of users at the expense of economic considerations. However, it is important to read this book as an account that considers user engagement with technology rather than providing a comprehensive history of technology in Europe. Indeed, this volume forms just one part of the Making Europe series, which focuses on technology as central to the creation of Europe between 1850 and 2000, the period they refer to as 'the Long Twentieth Century'. It stands alone, however, as a comprehensive appraisal of the ways in which Europeans variously modified and moulded technologies to suit their own ends.

A by-product of the focus on user appropriation is the fact that women are especially visible in this narrative. While the book does not present a specifically feminist account, by looking at technology through the lens of its users, women are revealed as active consumers, tinkerers and rebels.

Specifically, the idea of users as rebels is outlined most forcefully in the final section of the book and particularly through the descriptions of computer hackers in eastern Europe. Highlighting the individual consumer's power to subvert the technology of large-scale corporations links nicely to the book's conclusion, which examines the recent past to plea for users to actively challenge governmental and corporate-level decisions regarding technology: 'When individual users of consumer goods transform themselves into user-citizens, they become a force to be reckoned with' (p. 326).

COREEN MCGUIRE
University of Leeds

ANGELA N.H. CREAGER, *Life Atomic: A History of Radioisotopes in Science and Medicine*. Chicago: The University of Chicago Press, 2013. Pp. xvi + 489. ISBN 978-0-226-01780-8. £31.50 (hardback).

doi:10.1017/S0007087415000874

It is no secret that Matthew Meselson and Franklin Stahl's crucial experiment on DNA semi-conservative replication – based on radioactive labeling – is connected to the Hiroshima and Nagasaki blasts of August 1945. It is, however, less known that it is possible to draw a line from modern ecology back to the same Manhattan Project that purportedly put an end to the Second World War and commenced the nuclear age. In the two decades following the end of the conflict, life scientists teamed with nuclear researchers to expand the use of radioisotopes – radioactive atoms obtained by hitting existing elements with a neutron beam in a cyclotron or a nuclear reactor – in life sciences. Angela Creager's book follows radioisotopes in their booming phase, from the 1940s, to their relative decline in 1960s. Widely used as tracers in biological research, their role is mirrored in the historical perspective: following these human-made elements, it is possible to trace in great detail the development of life sciences post-Second World War.

As Creager's reconstruction underlines, the use of artificial radioactive elements pre-dates the war. However, the shift from low-energy cyclotrons to nuclear reactors made radioisotopes cheaper and more abundant. This shift also changed the institutional apparatus connected to the new elements. In the US the military became the main source for radioisotopes, and this changed the way in which scientists worldwide could access the material. At the same time, radioisotopes became 'political' objects to be exploited in the Cold War arena. The Atomic Energy Commission (AEC), created in 1946, inherited the management of nuclear power from the military-operated Manhattan District created during the war: one of the AEC's main concerns was to develop a positive public attitude towards atomic energy, and radioisotopes became an integral part of this effort. Creager devotes several pages to this topic, showing how scientists and politicians' agendas often clashed: while the AEC pushed for the free circulation of radioisotopes (implementing a low-price policy and making the bureaucracy easier), delivering nuclear 'objects' abroad appeared dangerous in the Cold War climate. Notwithstanding the political hurdles, science greatly benefited from the new technologies based on radioactive elements. The new molecular approach to biology blossomed thanks to the use of tracers: radioactive elements incorporated within biological macromolecules (e.g. nucleic acids or proteins) so that it was possible to follow in depth metabolic processes even in complex organisms.

The great wealth of details presented in Creager's reconstruction shows that molecular biology and biochemistry overlapped in their practices and shared many traits: the use of radioisotopes has been the common backbone for the development of a physical approach to the understanding of life, producing widely used methods as well as new questions to investigate. Medicine benefited from the use of radioisotopes too, especially in diagnostics. Several paragraphs are devoted to the introduction of radioelements in medical practices, and these sections are probably the most interesting within the book: they connect fundamental research and the 'hype' surrounding the use of radioisotopes in therapy. High hopes were raised, but results were scarce. Yet the promises perfectly fitted within the political agenda – the atom as a peaceful tool – so that they gained