

is awkwardness in the almost arbitrary separation of paragraphs listing biographical, institutional or publication data, dreadful 'snapshot' inserts of information on Western and Japanese people and history alike, ten appendices with further lists, and notes with facts as well as references. Readability is sacrificed. Yet there is a very interesting thesis about the uptake of psychology being in a reflective circle with the creation of individualizing self-consciousness, 'the burgeoning role of the individual's "inner life"' (p. 3), in modern Japanese society. Every aspect of the cosmos and of life was invested, in Japanese tradition, with *ki*, life force. Western dualism of mind and body, or of humans with souls and animals without, was foreign. Western psychology therefore appeared useful both for what it might contribute to modernizing the state, initially through what it might contribute to education, and as a discourse and set of practices appropriate for an interiorized individuality. But whether Western psychological knowledge and practice were simply taken over, imported, or whether the 'spiritual physics' along with the utilitarian evaluation of science constructed something different, we do not really learn. What McVeigh says about the continuity of religious attitudes into the modern world of psychological understanding could equally be said about European and North American psychology, especially in the domain of psychotherapy. He himself refers to 'how the ghost of spiritual physics still shapes our inquiries into how we view the mind, regardless of place' (p. 179). But, if so, what, if anything, makes Japanese psychology different? On the evidence presented here, rather contrary to the stated conclusion, Japanese psychology has made a large and productive contribution to Western psychology. If it is best, as a comment in the epilogue states, 'to think in terms of professional scientists emerging in linked and global networks, rather than of diffusion of science from the "West"' (p. 180), then what evidence of difference presented here supports that view?

ROGER SMITH
Independent scholar

REBECCA ONION, **Innocent Experiments: Childhood and the Culture of Popular Science in the United States**. Chapel Hill: University of North Carolina Press, 2016. Pp. 226. ISBN 978-1-4696-2947-6. \$29.95 (paperback).
doi:10.1017/S0007087418000183

Were you ever one of those children who spent their childhood playing with chemistry sets, visiting science museums or reading science fiction? In this thoroughly engaging and enthralling book, Rebecca Onion sets out to explore how children were encouraged to become science-minded by setting her sights on twentieth-century America. This theme is pursued largely through a series of chapters devoted to tracing the key cultural locations of science for American children, which on their own provided innovative (but not always entirely conventional) approaches to fostering scientific curiosity. Thus we start in the Brooklyn Children's Museum at the beginning of the twentieth century, as a prime example of an institution which attempted to create an exclusive space for children to learn science. From there on we are introduced to the rise of the interwar chemistry set, the establishment of the post-war Science Talent Search (STS), a juvenile literature dedicated to encouraging a love of all things space-related, and lastly the development of the San Francisco Exploratorium in the 1970s, just as the enthusiasm for science started to wane.

Fortunately, the thematic as well as chronological trajectory of the book enables Onion to provide a robust analysis of the underlying political ideologies surrounding children's engagement with science. The Brooklyn Children's Museum had, at its heart, an idyllic vision of childhood where children's participation in science was deemed to be cute for its adult onlookers. Yet the space the museum helped to create for children was mostly a middle-class vision that idealized children's scientific learning. But as soon as the chemistry industry took off at the turn of the century, toy manufacturers quickly spotted a gap in the market to bring a subject like chemistry into the home. Boys were encouraged to develop their curiosity through undertaking chemical experiments.

Many of these experiments, however, also encouraged some deviant behaviours. This was clearly the case amongst boys who nearly destroyed the family home via the anecdotal recollections of scientists, including physicist Richard Feynman and neurologist Oliver Sacks. Still, the fears surrounding a future shortage of scientific manpower were one of the primary reasons behind the establishment of the Science Talent Search (Chapter 3). STS was defined by its search to nurture the next embryo scientists and, in doing so, offered an alternative youth culture defined by independence, creativity and single-mindedness in the pursuit of science. There was also no shortage of conflicts between writers and their editors in how to present science to children when, in Chapter 4, Onion delves into the case of sci-fi writer Robert A. Heinlein – creator of the Heinlein juveniles. Whilst Heinlein wanted to instruct boys in the technicalities and social implications of science in order to question the tangibility of human nature, his editor was rather less enthused by the prospect. By Chapter 5, the story of Frank Oppenheimer (the younger and perhaps more interesting brother of Robert) provides a fascinating glimpse into the continuities running through the promotion of science for American children during the twentieth century. Even amidst concerns about ecological collapse and nuclear annihilation in the 1970s, Frank believed in the power of science as a force for productive change as he harked back to the pro-science and pro-technology attitudes of the 1930s. But Oppenheimer was also genuinely innovative in his approach to promoting science, especially when compared to the Brooklyn Children's Museum earlier on in the century. Oppenheimer sincerely believed that science was not just for children – adults too could become young again by engaging with the exhibits in the Exploratorium.

One of the overriding themes of this book is the ever-pertinent issue of gender alongside class and ethnicity – it quickly becomes apparent that science was mostly the preserve of white middle-class boys from the perspectives of both marketing and children's engagement in it across different sites. Girls, when they do appear, are relegated to the roles of spectators as they looked longingly on at their brothers playing with chemistry sets, or for the most part remained completely disinterested in learning science. As Onion notes in the conclusion, the very notion of 'boys and their toys' has become part of the wider lexicon of childhood science to such an extent that it has no doubt helped to reinforce ideas about the inherent boyishness of science (p. 167). What Onion arguably overlooks from a more analytical perspective is the persistence of a childhood enthusiasm for science in adulthood. Age, in recent years, has become as crucial as gender as another category of analysis amongst historians. Indeed, more attention could have been paid to showing how the boundaries of childhood and adulthood have been defined in relation to science. This could have been coupled with a further interrogation of the idea of 'science play' – another theme that Onion pursues in the book without much elaboration about the theories underlying play and its specific application to science for children. Onion's attempt to bring together both history-of-science and history-of-childhood perspectives to understand the portrayal of science for children could have usefully drawn upon these lines of analysis. Nevertheless, I could not help reflecting on my own childhood encounters with science as I was writing this review. And yes, I was one of those children who was taken to the Science Museum during the school holidays, owned quite an impressive rock collection, and for my generation, at least in the UK, was a fairly avid reader of the 1990s *Horrible Science* book series by Nick Arnold. Although I did not exactly become a scientist in adulthood, my interest in it never entirely went away – it simply became channelled in another direction, as I instead settled for writing about the history of the subject.

RUTH WAINMAN
Independent scholar