

Jordan D. Marché II, *Theaters of Time and Space: American Planetaria, 1930–1970* (New Brunswick, NJ: Rutgers University Press, 2005). 288pp. ISBN 081353576X US\$49.95 (hardback).

Planetarium visits have been highlights of many a school trip or family outing; the giggles as people crawl into an inflatable Starlab or the chatter as they take their seats under a large dome are hushed once the projection begins, and the experience has been an enjoyable and fascinating one for millions. Equally fascinating is the history of projection planetariums themselves, a subject that has yet to be given the widespread attention of historians, but is now covered in Jordan D. Marché's timely book.

Marché, a lecturer in astronomy at the University of Wisconsin-Madison, is well-placed to write a history of planetariums. He was formerly the director of the planetarium at Santa Fe Community College and editor of *The Planetarian*, the professional journal for planetarium workers. He returned to Indiana State University to study the social history of planetariums, studying over 700 institutions and 900 individuals for his doctoral work, which forms the basis of this book.

The book traces the early history of projection planetariums in Europe, from the first projection on the roof of the Zeiss factory in Jena in 1923 and the installation of a dome at the Deutsches Museum the following year. Marché discusses how Museum director Oskar von Miller's idea of using the projection planetarium to demonstrate Ptolemaic perceptions in tandem with a mechanical one that illustrated the Copernican worldview failed to take off, as the projection models became so popular with the public they became stand-alone attractions and tools for teaching descriptive astronomy.

Marché's story then follows the Zeiss projectors to America, focussing on the first five theatres where they were installed: Chicago's Adler Planetarium, the Fels Planetarium in Philadelphia, Griffith Observatory in Los Angeles, New York's Hayden Planetarium and the Buhl Planetarium in Pittsburgh. Through the stories of these institutions, which dominated the American market, he explores the birth of a new profession of astronomy educators, examining the motivations of planetarium founders, public enthusiasm for the new attractions, and interplay with the astronomical community. The stories of staff such as Philip Fox and Maude Bennot at the Adler Planetarium illustrate the tension between planetarium workers' pedagogical function and the desire (or pressure from benefactors and the scientific community) to carry out astronomical research, and how the

barriers faced by women scientists were paralleled in science education. This section is likely to resonate most with planetarium specialists, the most natural audience for the book, but the engaging characters also have appeal for general readers.

Marché looks at the postwar explosion in the planetarium sector, with the pinhole projectors of Armand N. Spitz making shows available to many educational institutions, despite some planetarium directors' protests that they could not match the quality of the Zeiss projections. The dawn of the space race, with an increased emphasis on astronomical education, saw hundreds of planetariums being constructed across the country. The resulting manpower shortage led to new training programmes for planetarium directors, finally establishing 'planetarian' as a profession in its own right.

Here and there Marché is prone to somewhat incongruous leaps or speculation – for example he likens the designers at Zeiss coming up with the idea of projecting onto the inside of a sphere to a gestalt switch, and repeats an unproven conjecture that a Hayden Planetarium show partially inspired Orson Welles's 'War of the Worlds' broadcast. But in general the book is well-balanced and comprehensively researched.

As Marché's remit is social history he does not go into detail on the technical aspects of Zeiss and other projectors, or on the architectural challenges of constructing the domes at the large sites; this does not affect his story but may be missed by the more technically-minded reader, and would be a welcome addition as an appendix to any future editions. While it is impossible to capture the planetarium experience in photographs, additional illustrations might give a general reader a better idea of the visual effects of different projection systems.

The book deals mainly with the period up to 1970, with more recent aspects such as the effects of digital technology and increasing commercialization in the sector touched on in the epilogue. Marché can only briefly mention an issue that has become a pressing one for the planetarium community – what to do with outmoded planetariums, no longer 'whizz-bang' enough to attract large audiences, but important historically in their own right? New York's Hayden Planetarium was demolished to make way for the new Rose Centre for Earth and Space in the mid-1990s, and a similar fate threatens other institutions. Marché suggests that a future historian may wish to give a fuller account of these issues; hopefully he or another writer will do so in the near future.

Alison Boyle

The Science Museum, London, UK