significance is missed, including those matters that were not happy for the Society. The editor and contributors to vol. ii are much to be congratulated in what they have provided, with one author at least spicing his admirable narrative with wit. Together the two volumes form a useful – and generally readable – contribution to the history of astronomy.

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THE HISTORY OF LICK OBSERVATORY


Since its founding in 1888 Lick Observatory has been one of the most important astronomical centres in the world, not only for the production of astronomical knowledge but also the training of astronomers. Launched before astrophysics had really been established as a pursuit for professionals, many of the early Lick staff devoted their labours to more traditional activities, although in time the Observatory's research orientation would fall squarely into line with the new discipline. The Observatory too was initially centred around a 36-inch refractor, but large reflectors would come to dominate the complement of telescopes. Lick's history has therefore much to tell us about the changing nature of the astronomical enterprise as well as the evolution of the Observatory itself.

In Eye on the sky: Lick Observatory's first century, Donald E. Osterbrock, John R. Gustafson and W. J. Shiloh Unruh – all of whom have worked at Lick in various capacities – recount with verve and candour the history of the Observatory's first hundred years. Although Eye on the sky is obviously based on a great deal of digging in archives, the story proceeds at a rapid speed, never overwhelming the reader with too much detail, and at a level that presumes next to no astronomical knowledge. Despite some lapses late in the text into lists of astronomers and their accomplishments, the book's most compelling feature is the strength of its narrative.

The authors' account is particularly lively in describing and untangling the Observatory's troubled founding and often turbulent, but nevertheless fascinating, early years (for those who want more on this period there is Helen Wright's recently published James Lick's monument: The saga of Captain Richard Floyd and the building of the Lick Observatory). Other notable features of the book are the generally convincing portraits that are drawn of prominent Lick astronomers. Not surprisingly, the most textured account is that of James E. Keeler, the subject of a fine recent biography by one of the authors and, like Keeler, one-time Lick director, Donald E. Osterbrock.

While recognising that it is intended as a popular history, many historians of astronomy and American science will nevertheless have a few regrets about what is not in Eye on the sky. First, the study raises some extremely interesting questions which it then neglects to answer explicitly. Chapter 8 focuses on W. W. Campbell and is entitled "The creative scientist who became a factory..."
manager", but the analogy of Lick to a factory is never explored in the text. Similarly, on p. ix we read that "Lick Observatory was one of the first 'big science' institutions in America...". Yet the theme of big science is promptly dropped and disappears until the brief final chapter where we are simply told that the Observatory's "outstanding importance is that it was the first big-science research observatory in America". As with big science, more might have been done with a number of the other themes that are implicit in the text, but which are never fully probed or connected with each other. The influence of patronage on the astronomical enterprise, for example, is a theme that runs throughout the book. By the choice of the authors, there is little attempt to locate Lick within a broader context, a context that would have helped to illuminate the activities at Lick. What, for instance, was Lick's place within the history of philanthropy and scientific institutions in late nineteenth-century America?

Another central theme is the sustained Lick emphasis on observing programs stretching over many years, an emphasis partly founded on a suspicion of theory. We are never clearly told why this was so. Probably the answer lies in a combination of factors. For a long period early in this century most astronomers, not only those at Lick, did not have the training or expertise to employ or engage in interchanges on the newer sorts of theories. Moreover, one suspects that if the authors had allied the Lick astronomers' suspicions of theory to the ready access to telescopes and the vigorous 'Baconian' in American science in the late nineteenth and early twentieth centuries, the persistence of such a strongly empirical tradition would have been more intelligible.

In addition, on a few occasions the authors' claims rest on shaky ground. Is it, for example, really evident that in the so-called "Great Debate" the Lick astronomer H. D. Curtis was "basically right, and [Harlow] Shapley basically wrong" (p. 145)? Was not, for instance, Curtis deploying ideas on the size of the Galaxy and the Sun's position within it that no astronomer would have accepted only a few years later? Was Simon Newcomb really "The greatest astronomer of his time 1874-1878" as we are told at the beginning of Chapter 2? What about U. J. J. Le Verrier or John Couch Adams, for example?

There are also ten pages of "References" which list the major papers and books that have been employed and an impressive list of the clearly rich archival sources and oral history interviews that have been mined and collected and the contents of which inform the text. However, Eye on the sky lacks direct citations to sources. It is understandable in a popular work for the authors to want not to 'clutter' the text, but it is disappointing nevertheless.

Eye on the sky also raises a more general issue for those concerned with the history of American astronomy since the dawn of astrophysics: How much can one learn from one institution, however eminent? Certainly one point the book helps to underscore is that the time is perhaps ripe for someone to attempt a full-length, analytical history of the development of American astronomy in the late nineteenth and twentieth centuries. The last decade or so has seen an ever-expanding interest in this area and has led to studies focused on individual theories, biographies, and the histories of single institutions and fields, but until