

Comptes rendus de livres

Richard Panek, *Seeing and Believing: How the Telescope Opened Our Eyes and Minds to the Heavens*

RANDALL BROOKS

Panek, Richard, *Seeing and Believing: How the Telescope Opened Our Eyes and Minds to the Heavens*. New York: Viking, 1998. 198 pp. Cloth, \$30.99, ISBN 0-670-87628-3.

Seeing and Believing: How the Telescope Opened Our Eyes and Minds to the Heavens describes some of the most important astronomical discoveries of the last four centuries and how the telescope (primarily optical telescopes and their instrumentation) played a role in the discoveries and the subsequent interpretation of the observations. On first seeing the title of this book, my expectation was that it would be rather philosophical in its approach. To a point this is true and the concept and objective is fresh. However, *Seeing and Believing* is not a deeply philosophical work, though it does pose some interesting questions. In the hands of a philosopher well versed in astronomy, the topic might have made very entertaining reading indeed. Likewise, this is not a potential episode for James Burke's *Connections* series; Panek does attempt to show cause and effect of the telescope on scientific and public perception as well as following the thread of instrumental evolution but here too, *Seeing and Believing* falls short in the depth of the analysis.

Panek is a journalist with an interest in astronomy and his style is very different from what I usually encounter when reading histories of astronomical instruments. Where historians of scientific technology most often take a chronological or conceptual approach, Panek picks the most important innovations, expounds on them and the subsequent discoveries made with them, then returns to other events or innovations that led to the major breakthroughs. Personally I found this disconcerting as I kept wondering if, and when, he would come back to key elements of the story; in most cases he did.

Not being a specialist in the history of scientific instruments, Panek's account includes a few minor errors though these are not serious for the lay reader. These arise from citing reference works two, three or more decades old during which time new findings and new interpretations in this young and relatively immature discipline have modified our view of the advancement of scientific instruments and their role in scientific discovery.

In discussing the impact of early observations, there is some confusion in Panek's account as to what the logical reaction to the new revelations should have been. But here Panek, and we, must remember that the scientific method was in its infancy in Galileo's mind and was not yet written down let alone accepted practice among his contemporaries. Thus the reaction and reluctance of most educated people to accept Galileo's and other early astronomers' interpretations of the observations should be anticipated. The culture of careful comparison and analysis within the scientific community was still several decades away.

Unfortunately the scientific and philosophical significance of twentieth century observations are not as strongly presented as those of the seventeenth century. The startling astronomical discoveries and revelations made by Galileo have been paralleled in recent years by those made using new technologies, for example, radio telescopes and astronomical satellites like the Hubble Space Telescope and, when modern discoveries are combined with modern cosmological theory, they make for equally mind opening possibilities. But this brings us full circle on the interpretation of newly discovered features and the scientific method — rarely are they just accepted without question. Indeed, as I write this, I have a news release beside me describing a "new" object — "Astronomers Baffled by Space

Oddity" (John Noble Wilford, *New York Times*, 18 August 1999) — discovered three years ago but still unexplained. In the world of science, observations and theories are placed on the table for others to digest and respond to. If the scientific method is working properly, alternatives are put forth and compared until one stream of thought takes hold. A fine recent example was the debate on the nature of quasars that raged for over twenty years following their discovery in the mid 1960s. It is a fascinating episode in modern astronomy but, regrettably, it only receives a brief mention in *Seeing and Believing*.

In the end, I am still wondering who the primary audience of *Seeing and Believing* was intended to be. The lack of photos, other than those on the dust cover, means it will not particularly appeal to most adolescents.

Christopher A. Andreae, *Lines of Country: An Atlas of Railway and Waterway History in Canada*

R. JOHN CORBY

Andreae, Christopher A. *Lines of Country: An Atlas of Railway and Waterway History in Canada*. Erin, Ont.: Boston Mills Press, 1997. 227 pp., illus. and maps. \$95, ISBN 1-55046-133-8.

In every sense this latest work by Christopher Andreae, president of Historica Research Ltd will probably be considered as his "magnum opus." The author is a respected transportation historian who, during the various contracts undertaken by his company over the years, has amassed a large amount of material, which though perhaps not germane to the projects then at hand has provided the substance for the present book. When the need to put bread on the table is a priority the gestation period for a major work is apt to be lengthy, in this case about twenty years. It is gratifying to report then that the labours of Sisyphus were in this case not in vain. As the author notes in the Preface there is a double meaning to the title. "Line of Country" can be a semi-archaic interrogative as in "what is your line of country?", that is, "what do you do for a living?", but in this context refers to the assembly of the linear transportation networks that contributed so much to the building of Canada. As to the subtitle, the word "atlas" immediately conjures up images of size and in this respect *Lines of Country*

However, I could well imagine that I would have loved it as a teen when I was attempting to glean information from any and every accessible book on astronomy. Indeed, for today's junior and senior high-school students similarly fascinated by astronomy, *Seeing and Believing* will be appreciated. The level of content is clearly not directed at university students as even basic astronomy courses cover the material in more depth, though, as noted above, usually in a much more traditional manner. This perhaps leaves, as a primary audience, the casual reader looking for some relatively light reading that is also informative and even a bit thought provoking. For that audience, it is a good read but, notwithstanding high editorial and production standards, the price of the hard cover edition seems a bit steep for this type of audience.

does not disappoint. It is a hefty volume measuring some 41 x 31 cm and weighing in at 3.5 kg, quite literally a "coffee table" book. The review copy arrived with a badly bumped corner, so its mass was obviously an unexpected surprise to one of its handlers. Somewhat more startling was to find a number of pages bound in upside down, this in a work costing with taxes well over one hundred Canadian dollars: perhaps the fact that it was printed and bound overseas may have been a contributing factor.

The design is the work of Mark Fram and is very well done. There is no dust jacket, instead the usual credits are sleeved onto the boards. The latter are black, evocative of the colour of most North American locomotives in the days of steam and of the fuel that powered them. The front features a full-width vertically-cropped photograph of the old Brantford station and the adjacent trackage, thus anticipating the linear theme of the contents. As befits the title these are heavy on photographs and maps with the latter being executed by the cartography office of the Department of Geography at the University of Toronto. These are beautifully rendered using a technique that advances in computerized mapping made obsolete before the completion of the work. However, despite