

impact on the field of astrophysics. Even graduates out of the less-dynamic Frost-years made very important contributions to astrophysics. Names like Edwin Hubble, Otto Struve, Nicholas T Bobrovnikoff, William W Morgan, Philip C Keenan, and Christian T Elvey feature.

But perhaps Otto Struve's most important decision was to bring in three brilliant young researchers from overseas: Gerard P Kuiper from the Netherlands, Bengt Stromgren from Denmark and Subrahmanyan Chandrasekhar from India, and to appoint as post-doctoral fellows Jesse L Greenstein and Bart J Bok. Many of these younger appointees were to go on to become directors including Bart Bok at the Mount Stromlo and Siding Spring Observatories in Australia.

Donald E Osterbrock, himself an astronomer with a high reputation, has woven this book with charm and some amount of 'dry' wit. He has not held back from detailing the mistakes and manipulations undertaken by the Yerkes directors to get their own way in running the Observatory. I was left though, at the end of the book, with the feeling that some of the characters of the book had not come 'alive' for me. Perhaps Donald Osterbrock, in being meticulous with the details of the history of Yerkes Observatory, tends to overcome the reader with the sheer volume of facts. The reader is left with a feeling that the people, as astronomers fascinated in their science, are somewhat put to one side in the telling of the history.

I recommend the book as an important tribute to the work of the Yerkes Observatory and suggest it to the student of the history of the early years of astrophysics.

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Instrument Makers to the World. A History of Cooke, Troughton & Simms, by A. McConnell (William Sessions, York, 1992), xii + 116 pp., ISBN 1-85072-096-7, paperback, 210 × 200 mm.

In recent years, those of us interested in historic telescopes have been particularly fortunate with the appearance (or in one case, re-appearance) of books about Alvan Clark and Sons, Thomas and Howard Grubb, Simms and Cooke instruments. My own institution, Carter Observatory in New Zealand, is home to the ex-Crossley 23-cm Cooke refractor of 1860s vintage (see Orchiston 1996), so McConnell's book about Cooke, Troughton, and Simms was of special interest.

Dr Anita McConnell is well known for her work on historic scientific instruments, and has done a thorough job in taking us through the involved evolution of the company, from its early days under John Troughton to the Vickers Instrument Company of today. Along the way, the astronomical activities were sold off to Grubb, Parsons & Co. (in 1938), which subsequently closed. The five chapters on the Troughton and the Simms families provide a valuable exposé on their various astronomical activities before joining up with T Cooke & Sons Ltd. in 1922.

One of the things which quickly emerges in these early chapters is that Troughton and Simms were involved in manufacturing a wide range of astronomical instruments – and not just telescopes. Discussed are quadrants, transit circles, mural circles, transit telescopes, repeating circles, and even a small orrery. Also included are the surveying instruments which were widely used by professional astronomers during the nineteenth century for trigonometrical surveys. Amongst the many illustrations (on page 30) is one of my all-time favourites: the dismantled remains of Sir James South's 29.8-cm Troughton refractor scattered over the lawn outside his observatory in 1839.

The second half of the book deals with the Cookes. During the nineteenth century, Thomas Cooke and his sons Charles Frederick and Thomas (junior) were at the vanguard of telescope-making. From 1855, they exhibited regularly at exhibitions in England and abroad, and secured contracts from major amateur and professional observatories throughout the world (but mostly in the British Empire). In 1871 they completed a 63.5-cm refractor for the wealthy British amateur astronomer, R S Newall, and for two years this instrument was the largest refractor in the world. At around the same time, the 1874 and 1882 transits of Venus had a profound impact on their order-books.

In addition to their fine telescopes, Cookes also became known for their domes, including the famous Onion Dome at Greenwich. But their focus extended far beyond astronomy, and they too were particularly well-known for their surveying instruments. Towards the end of the nineteenth century 'optical munitions' became important.

Early in the 1880s, the firm acquired "A brilliant and inventive young man ... " named Dennis Taylor (1861-1943), who was to assemble some 50 patents for a variety of optical instruments. One of these was the photovisual objective, and the Carter Observatory telescope was furnished with an early example of this. In 1891, Taylor's book, *The Adjusting and Testing of Telescope Objectives*, was published, and this quickly became the standard work in this field. For many years, Taylor was a Cooke stalwart, and he made an important contribution to astronomical optics. McConnell tells us that he counted "... gardening, astronomy, photography and natural history among his hobbies ..." (page 71).

From these dizzy heights, it is remarkable to reflect on how quickly the fortunes of the company changed. In 1922 it was reconstituted as Cooke, Troughton & Simms, and despite their long and successful collective track records as manufacturers of astronomical equipment of all kinds, it took just two years before the new business was up for sale. They were bought out by Vickers, who after the depths of the Great Depression transferred the astronomical side of the business to Grubb, Parsons Ltd. in 1938. After precisely 100 years the Cooke telescope, a respected British institution, was no more.

For those of us with a love of old refractors, Cooke or otherwise, McConnell's book tells a tantalizing tale, and it will find a place in many a bookcase. I thoroughly recommend it.

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Vultus Uraniae, by Laura Peperoni and Marina Zuccoli (Biblioteca Universitaria di Bologna, 1996), 32 pp. paperback, A4.

Ex libris stellarum, edited by Remo Palmirani and Marina Zuccoli (Editrice Lo Scarabeo, Bologna, 1998), 38 pp., paperback, B5.

It is not very often that there is the offer of two charming little books just for the price of a letter requesting same from the University. *The Countenance of Urania* is written in both Italian and English in adjoining columns and was made available originally at the time of an exhibition of volumes from the library of the Department of Astronomy of the University of Bologna and the University Center for Museums and Archives.

The reader is given a brief introduction to the mythology of the Muse Urania and her sisters. This is followed by a description of some literary and astronomical works which mention Urania in their titles. The first illustration is not of the 'vultus Uraniae', but of Sextans Uraniae in Hevelius' *Star Atlas* of 1690; however, the frontispiece his earlier work *Selenographia* shows Urania between the Moon and the Sun seated upon an eagle. For this and most of the other engravings depicting Urania there are notes on the artists who did the engravings.

For those interested in books and particularly astronomical books, there is a wealth of information to be culled from this delightful little book. To whet your appetite, the frontispiece from La Caille's *Ephemerides des mouvemens célestes, pour dix années, depuis 1765 jusqu'en 1775, et pour le meridiem de la ville de Paris, 1763* is reproduced on the inside backcover; the engraving is signed by Simon Challe and François Antoine Aveline.

It is pleasing to see that the delightful practice of personalizing your books with your very own book-plate has not gone the way of many other traditions. I remember designing and printing one whilst a student which depicted the three branches of science in which I was