

Reviews

Yerkes Observatory, 1892-1950, The Birth, Near Death, and Resurrection of a Scientific Research Institution, by Donald E Osterbrock (University of Chicago Press, Chicago, 1997), 394 pp., ISBN: 0-226-63945-2, US \$40; UK £31.95, hardback, 235 × 160 mm.

This is a story of the people and events surrounding one of the most important observatories for optical astronomy in the USA. It is a story of the people, the decisions and the events leading to the creation of Yerkes Observatory and subsequently to the plethora of discoveries coming out of the Observatory.

From the first steps in the creation of the Observatory in 1892 as "... America's second big-science establishment", through its years of decline between 1904 – 1932, to the "... golden years" of the Observatory in the 1930's and 1940's – this is the story of many of the people who have shaped modern astrophysics.

One could say that Yerkes Observatory was created and supported through those critical years when astronomers increasingly moved away from position astronomy as their chief occupation into the emerging and far more scientifically fruitful work of astrophysics. Today's astronomers and astrophysicists were trained in developing many of the scientific ideas that came out of Yerkes Observatory.

This is an interesting and well-researched book which looks in detail at the interactions of the people involved in the Observatory and its discoveries. The book is very easy to read and the style of writing flows smoothly throughout the story to the end page.

It is a book for those interested in the history of astronomy or on the developmental stages of astrophysics. Astronomers and others interested in the way the politics of science works will also find this a fascinating book. It is not a book that investigates in detail the ideas behind the physics or science that evolved in the period under discussion. It is also not a book that would engender excitement in a student of the science of astronomy in their formative years.

With my own background in astrophysics, and from 30 years as a practising astronomer, I found the book absorbing, so I completed the book in a single reading; others may likewise be unable to put the book down.

If you are interested in the history-and-philosophy-of-science aspects of astronomical discovery then this is a book for you.

From the inception of the observatory through private funding from Charles T Yerkes to the struggles that three of the directors of the Observatory had in obtaining continuing funding from the University of Chicago, other private benefactors, and/or foundations supporting science – this is the story of the interactions between many famous 'names' in physics, astronomy, and astrophysics of the nineteenth and twentieth century. From George Ellery Hale who built Yerkes Observatory, through Edwin B Frost who let it run down, to Otto Struve who revived it again ... all played critical parts in the life of Yerkes Observatory and this, as much as anything else, is their story.

It is also the story of the events over which they presided: the start of one of the most important journals to modern astrophysics – the *Astrophysical Journal*; the founding of the American Astronomical Society (the AAS); the important involvement of the Carnegie Institution in funding processes during the early years of astrophysics; and the building of the Mount Wilson Observatory – all under the leadership of George Hale. Then followed the 'wilderness' years when lack of dynamic leadership led to a serious decline in the status and work of the Yerkes Observatory. However, with the arrival of Otto Struve the quality of leadership revived and again Yerkes Observatory became a centre to be admired, with many enthusiastic and highly-intelligent, young astrophysicists working within its walls.

No less important in this history are the programmes for training the new generation of astronomers at Yerkes – the students who went on to other positions and made an enormous

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.