

First Impressions by Charles Draper of “William Herschel – Discoverer of the Night Sky” by Dr Wolfgang Steinicke

Dr Wolfgang Steinicke wrote to us in August 2020 about his preparation of the first comprehensive book on Herschel’s deep sky observations from a historical point of view. We welcomed the idea of publishing a taster in the Journal. You may well have read it in our Spring 2021 Issue. He told us that the book itself was timed to be ready for the 2022 anniversary, and in early November the copy I ordered arrived with a thump on the doormat! It is a very substantial work, in both senses of the term. Here are my impressions of it.

Steinicke explains in his Preface that his interest in both practical observing and its history goes back many years, with an earlier study of the NGC published by the CUP in 2010, and he then followed Dreyer’s footsteps into the study of William Herschel’s instrumental, observational, and theoretical development of deep sky astronomy. For this book Steinicke has analysed all the available documents and publications to get a modern understanding of William’s observing achievements, how they were obtained, and what conclusions he drew from them. While the main focus is on William, Caroline’s roles as observing partner, analyst and cataloguer feature increasingly as the narrative develops, while Alexander’s key role as technician is acknowledged, as is John’s in completing and enlarging on his father’s work.

The work is logically ordered in sections. The first three are chronological. Section 1 starts with William’s first systematic observations in the early 1770s. It covers his reading, his first telescopes, and his studies of double stars as a means of using the parallax method to measure stellar distances. Then we have the Uranus discovery story, the move to Datchet, and his increasing interest in nebulae, as he realised that his telescopes of increasing size enabled him to resolve at least some of these patches of light into stars. As in all the sections, there are many (black and white) pictures of William’s sketches, writings and reference documents, instruments, and frequent tabulations of his observational data. Towards the end there are also accounts of Caroline’s observations, and her records of them.

Section 2 is much the longest (140+ pages) and describes William’s great methodical surveys (“Sweeps”) over most of a decade from 1783. It covers the construction of the new 20 ft (19” mirror) telescope that was to be central to his observing and discoveries for the next two decades. It describes the sweeping process in detail, and the key realisation that the most efficient way to conduct the work was for William to do the observing, and the ever-willing Caroline to record and compile the results, thus beginning this key collaboration that was so central to their achievements. There are copies of journal extracts, summary tables, session by session details, sketches of objects sighted and modern images for comparison. Identity mysteries are explored. New mechanical time- and position- recording devices made by the ever-creative Alexander are described. We see accounts by visitors, and some comparisons looking forward to the works of John, and Earl Rosse. There is the move to Clay Hall, and the publication of the first Catalogue. We have the (final) move to Slough, first attempts to observe with the new 40 ft telescope, and the beginnings of new opportunities for Caroline to observe for herself. There are intriguing side stories from time to time – such

as the naming (for over a century) of a constellation after William's 7ft telescope! (It is now part of Auriga). This Section takes us to about 1794. The main Sweeping campaign was over. William had married. John was born in 1792, and the rhythm of William's and Caroline's lives were changed as a result.

Section 3 takes the narrative to the end. It describes the making and testing of the 25 ft telescope for the King of Spain. There is also the making of a new telescope by the ever-ingenuous Alexander that William described as a convenient instrument for an old man, and was much used by him in his later years. (Its 24" F5 mirror and simple hand-worked AltAz mount will remind many of us of a large modern Dobsonian!) There are further accounts of struggles to get useful results from the 40 ft, William's final years, and Caroline's return to Hanover. Then we have the further cataloguing work undertaken that proved so helpful to John and the compilation of the New General Catalogue that we know today.

Section 4 deals with William's star "gages", his deductions about the nature and shape of what we now call our Galaxy, and the papers he wrote about them for the Royal Society.

Section 5 is perhaps the most remarkable part of the book. Here Steinicke uses the detailed records of William's observing sweeps to provide a comprehensive picture of which parts of the celestial sphere he surveyed, and which not, and to get a modern understanding of how many objects William discovered and how accurately he and Caroline captured the relevant data. This is a remarkable piece of work that I do not believe has been attempted at this level of detail before. One visually striking result is the graphic illustrated in colour on the back of at least the hardback version of the book. The strips of sky coverage that this is composed of may remind you of modern space-based survey telescope observing patterns.

Section 6 brings the cataloguing story up to date, through John's work and others, Dreyer's catalogues, and updated to today at Steinicke's website www.klima-luft.de/steinicke

Finally, there is an Epilogue and many Appendices that suggest an attraction to ordering in Steinicke that would have appealed to Caroline. The Epilogue gives John's ranking of his father's achievements. Next there is a list of books about William and Caroline, referenced by their front covers. The Appendix lists – Visitors, William's Journeys, and a Timeline of Key Events. Then, there are separate Indices of People; Celestial Objects, including Nebulae and Star Clusters by name, by catalogue and number; then double stars, then stars by name, by constellation, and by catalogue; then solar system objects; then subject topics, telescopes, Institutions and sites, source catalogues, and abbreviations. Finally, there is a set of references.

This is a phenomenal work of scholarship. It is not a general history of William or his family, or of all his scientific interests. But it is a comprehensive history of William as an observer, of the telescopes he built for his needs, of his conclusions from what he observed, of the help he received from his family and others, and finally a modern analysis of the results. No-one else has published such a comprehensive work on this main aspect of William's life in modern times. It is unquestionably very long, and a book of reference rather than a narrative to be read through, but if the subject matter appeals, you will not be disappointed.

Some assurances may be in order. Steinicke is writing in his second language, but he has excellent English, and an easy and fluent style. In January 2022 the book was available only on Amazon. It has been self-published, which can be a warning sign of a project driven mainly by vanity, but not in this case. Steinicke describes the work as a contribution to William's bicentenary, and it is a very valuable one.

Charles Draper