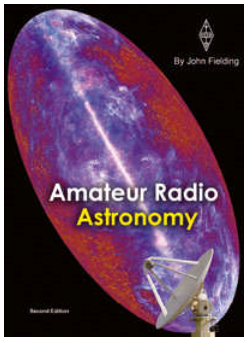
Book Review



Title: ***Amateur Radio Astronomy, 2nd Edition***
Author: John Fielding, ZS5JF
Publisher: Radio Society of Great Britain
Date published: 2011
Length: 375 pages with 14 chapters, a 3-1/2 page index, one appendix
Availability: Available new in paperback from RSGB (http://www.rsgbshop.org/) for £16.99 plus shipping (approximately US$28). RSGB members receive a 15% discount. Also available from American Radio Relay League (ARRL, http://www.arrl.org/shop/RSGB-Publications/) for US$32.95 plus shipping
Reviewed by: Whitham D. Reeve

I reviewed the 1st (2006) edition of this book in the August-September 2009 SARA journal. The 2nd edition is slightly larger with 64 additional pages. The original review was not very favorable and, unfortunately, much of what I complained about in the 1st edition remains in the 2nd edition. Readers should refer to the original review – the following will touch mainly on the changes.

The author is an engineer and licensed radio amateur. He says in the forward he is not a radio astronomer but he wrote the book because there are no books "dealing with radio astronomy from the radio amateur's perspective". His writing style is easy to read but one problem is his method of citing references. For example, one reference gives only the publisher and ISBN number, no title, author, or date. Another reference provides the name of a magazine and a month and year, but no article title or author. Many chapters have no references at all. There are page numbering errors in the Table of Contents. These problems do not seriously impede the reader but they indicate inadequate proof reading and review.

I found the overall organization has not improved with the 2nd edition. For example, there still is a short chapter on "Early Low Noise Amplifiers" and three chapters later one titled "Practical Low Noise Amplifiers" followed by another titled "Assessing Receiver Noise Performance." The chapter on early low noise amplifiers could have been eliminated altogether or perhaps put in the historical chapter.

Chapter 2 on "low frequency radio astronomy" refers mostly to the High Frequency (HF) band from 3 to 30 MHz and, in particular, to the frequencies used by radio amateurs. There is no mention in this chapter or in the whole book of the very popular activity of receiving Sudden Ionospheric Disturbances (SID) and other low-frequency phenomena in the 3 to 30 kHz and 30 to 300 kHz frequency bands (VLF and LF, respectively).

The author provides good technical overviews in Chapters 3 (Receiver Parameters) and Chapter 4 (Antenna Parameters). The total length of these two chapters is 102 pages, which is 10 pages more than the 1st edition. These two chapters form the basis for a description of radio telescopes and how they work. Both chapters use some arithmetic to describe the technical aspects involved but there are very few examples of using real numbers in real systems. There are many pictures of professional radio telescopes (primarily antennas) but relatively few of receivers and antennas used by amateur radio astronomers in their scopes.

Chapter 6, Assembling a Station, has increased in length by 10 pages but still lacks a good discussion of contemporary techniques for recording celestial emissions. There is some discussion of using a cassette recorder but none about dataloggers, solid-state audio recording devices, and computer controlled charting programs. I was very surprised to note that the section on "Feed-Line Considerations" still is only a few sentences, despite the fact that many amateur radio astronomers could use help in choosing and applying transmission lines (feed-lines) and associated connectors. The bulk of the size increase of

this chapter appears to be added sections on a C-band (4-8 GHz) radio telescope and a discussion of radio object catalogs and object naming.

The following chapters appear to be unchanged from the 1st edition (see original review):

Chapter 7, 50 MHz Meteor Radar System
Chapter 8, Practical Low Noise Amplifiers
Chapter 9, Assessing Receiver Noise Performance
Chapter 10, Station Accessories
Chapter 11, Low Frequency Radio Astronomy
Chapter 12, The Science of Meteor Scatter
Chapter 13, A Hydrogen Line Receiving System

Chapter 14, Mechanical System Considerations, is a new chapter and at 38 pages is one of the longer chapters in the book. I read this chapter with interest. Some of it is meant for the advanced amateur but much of it is too brief to be of much use except possibly as inspiration for further study (it is too bad there are no references in this chapter). Some topics covered here are legal requirements, antenna mount and position systems, torque, computer control and servo systems, feed horn supporting struts and safety features. There is a section on modifying a Bosch windshield wiper motor assembly for antenna positioning – the information probably is applicable to any kind of wiper motor assembly.

One final addition is a 6-page appendix describing the mechanical construction of the 15 m Karoo Array Telescope at Hartebeesthoek Radio Astronomy Observatory in South Africa – the Hart RAO KAT. The reason for this appendix is unclear. Although the pictures are interesting, the appendix describes a professional installation and something that is far beyond the means of most amateur radio astronomers.

In conclusion, little has changed or improved in the 2nd edition. The new chapter 14 represents the only major change, adding marginally to the value of the book. However, in spite of its short-comings, ***Amateur Radio Astronomy***, 2nd edition is better than many other books on amateur radio astronomy in my library and it may be a good incremental addition for journal readers wanting to build their libraries.

Reviewer – Whitham D. Reeve

Whitham Reeve was born in Anchorage, Alaska and has lived there his entire life. He became interested in electronics in 1958 and worked in the airline industry in the 1960s and 1970s as an avionics technician, engineer and manager responsible for the design, installation and maintenance of electronic equipment and systems in large airplanes. For the next 38 years he worked as an engineer in the telecommunications and electric utility industries with the last 33 years as owner and operator of Reeve Engineers, an Anchorage-based consulting engineering firm. Mr. Reeve is a registered professional electrical engineer with BSEE and MEE degrees. He has written a number of books for practicing engineers and enjoys writing about technical subjects. Recently he has been building a radio science observatory for studying electromagnetic phenomena associated with the Sun, Earth and other planets.