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Double and Multiple Stars and How to Observe Them

With 45 Figures

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Cover illustration: A red dwarf, shown in the background, is at the mercy of its highly magnetic white dwarf companion in this depiction of a so-called intermediate polar binary system. Gas lost from the red star is channelled toward the white dwarf's poles along magnetic field lines, where it emits the X-rays that make these systems so powerful.

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Preface

You are holding in your hands, dear Reader, your passport to an exciting cosmic adventure – exploring the universe of double and multiple stars! These are the sky's tinted jewels and waltzing couples, and they are waiting patiently in the darkness of night to dazzle and delight you.

This is actually two books in one. The first part surveys the current state of knowledge about double stars – how they are born, evolve and interact, their significance in the cosmic scheme of things, and the valuable insights they provide into such fundamental matters as stellar masses and the ultimate fate of stars. The more we know about these fascinating objects, the more enjoyment we will ultimately derive from actually viewing them firsthand with binoculars and telescopes from our gardens or backyards or fields. As Charles Edward Barns stated in his long out-of-print classic *1001 Celestial Wonders,*

> Let me learn all that is known of them,
> Love them for the joy of loving.
> For, as a traveler in far countries
> Brings back only what he takes,
> So shall the scope of my foreknowledge
> Measure the depth of their profit and charm to me.

The second part of this book is an observing guide that tells the reader how and what to look for, examines the use of various types of telescopes and accessories (including such modern ones as video and CCD imaging devices), and offers a selection of fascinating projects suitable for novice stargazers as well as advanced amateurs. These projects range from those intended for the reader's own pleasure and edification to those that actually have the potential of contributing to the science of double star astronomy itself.

The highlight of the second section (and, indeed, perhaps of the entire book!) are two carefully compiled observing rosters – one showcasing 100 of the sky's finest double and multiple stars for viewing with telescopes from 2 to 14 inches in aperture, and the other a more extensive tabulation of 400 additional pairs for further exploration and study. Together, these two lists offer 500 selected stellar wonders for your enjoyment.

The material in this book is based on decades of studying double stars by the author as a professional observer and more than half a century as a passionate "stargazer" surveying the heavens for its visual treasures – especially striking double and multiple stars! These observations were made using everything from 7×50 and 10×50 binoculars to refracting telescopes from 2 to 30 inches (!) in

aperture, reflecting telescopes from 3 to 36 inches, and catadioptric telescopes from 3.5 to 22 inches in size. It is my sincere wish that you, the reader, will find the same joy and satisfaction in becoming personally acquainted with these fascinating objects as I continue to do – even after all those years and all those telescopes!

In closing, we again quote from Barns:

> Lo, the Star-lords are assembling,
> And the banquet-board is set;
> We approach with fear and trembling.
> But we leave them with regret.

James Mullaney
Rehoboth Beach, Delaware

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Contents

Part I All About Double and Multiple Stars

Part II Observing Double and Multiple Stars

Appendices

Part I

All About Double and Multiple Stars