



Books and Multimedia Reviews

Our Universe: The Thrill of Extragalactic Exploration as Told by Leading Experts edited by S. Alan Stern. Cambridge University Press, New York, New York, USA, 2001, 152 pp., \$19.95 softcover (ISBN 0-521-78907-9).

Our Universe tells nine true stories about why people do science and how science really gets done. This book is unusual because the tales are told from the heart about their authors' dearest subjects of study. The writers are all leading experts in extragalactic astrophysics, both junior and senior investigators on the frontiers of knowledge, yet their stories are easily understandable by a wide audience of readers.

The science conveyed in their stories is, of course, fascinating, but what is just as interesting is the insight they give into the sociology of science and the role personalities play in scientific revolutions. You want to know how science really gets done? Someone bets you a bottle of wine you're flat wrong and they're right. It's amazing how much effort you'll expend to win that bet!

Of course it is hard to overcome the inertia of conventional wisdom. As one of the authors relates, you may be "cast off into the wilderness" if you go against the mainstream. How you move your ideas from that position to widely accepted knowledge makes for a gripping yarn, and there are nine of them here. They include the observational discovery of gamma-ray bursting hypernovae, ghostly low surface-brightness galaxies, elusive dark matter, and theoretical supercomputer models of the large-scale universe.

Many of the authors include stories of the events early in their lives that led them into science. Each such case is, of course, unique, but I think it is important for those young adults who are considering science as a career to know that it can actually be done, though the path may have many unexpected twists and turns. Each of the articles includes as well suggested readings and web sites on the topics, also at a level understandable by a well-prepared high-school student.

These insiders' perspectives of the real world of astrophysical research make this a fascinating book for anyone to read, especially someone interested in science as a career. The highly personal accounts tell not only what scientists do, but also why they want to do it and how they achieved their current status in life. I highly recommend this book to all who are interested in our universe and the people who study it.

Claud H. Sandberg Lacy
Department of Physics
University of Arkansas
Fayetteville, Arkansas 72701, USA

Solar System Dynamics by C. D. Murray and S. F. Dermott. Cambridge University Press, Cambridge, United Kingdom, 1999, 575 pp., \$39.95 softcover (ISBN 0-521-57597-4).

Solar System Dynamics is a textbook devoted to the dynamical exposition and understanding of the solar system. It is an ambitious book that covers a wide range of topics, tying together classical dynamical astronomy material with more recent research on all aspects of motion in the solar system. The authors have successfully knit these diverse topics into one coherent and authoritative text that brings recent developments in dynamical systems theory and the physics and geophysics of the solar system within the fold of dynamical astronomy. In fact, it represents a new breed of dynamical astronomy textbook.

I am certainly not alone in this opinion, as the back cover of the book is graced by strong endorsements from a number of leading researchers and authorities in the field of solar system dynamics. In fact, given the impressive list of endorsements, it would be very difficult to come to any other conclusion. So I will instead focus on its content and, perhaps more importantly, the shift in the field of dynamical astronomy that this textbook signifies.

The book is almost 600 pages and includes an extensive bibliography, numerous drawings, photographs, graphs, and plots distributed throughout. The style of writing is informal, and the discussions have many physical examples that motivate the mathematical developments. Even with this informal style, however, the level of mathematics covered in the text is sufficiently deep and detailed to convey the advanced theory, and can be used as a starting point for serious research. The book has an associated website (<http://ssdbook.maths.qmw.ac.uk/>) with more details about the book, an extensive collection of computer animations and programs highlighting various aspects of the theory, and a comprehensive list of corrections. It should be noted that the current list of corrections runs for 15 pages and is apparently still growing (the most recent entries date from November 2001); hopefully a future printing of the text will accommodate these. Each chapter also has a set of challenging and well thought out homework problems. This book is an excellent selection for use in a graduate solar system dynamics course, as a reference book for practitioners of dynamical astronomy, or as an introduction to a particular area of research. As the title advertises, this book deals specifically with the solar system in its current and relatively recent state; indeed, there is little discussion of the formation dynamics of the solar system or of extra-solar planetary systems.

For those who are familiar with the standard texts in dynamical astronomy with a solar system emphasis, such as the books by Roy, Danby, or Brouwer and Clemence (to name the most recent examples), the current text incorporates important new material that has been developed in the time