



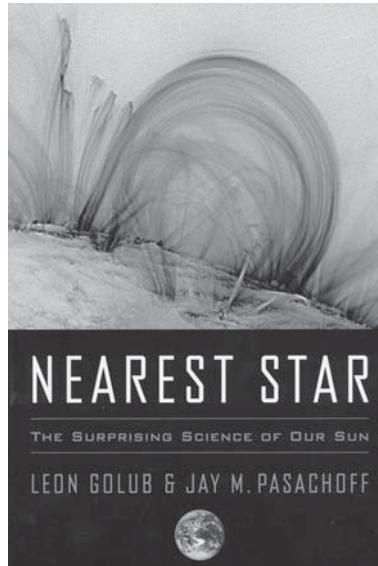
Nearest star: the surprising science of our Sun

by Leon Golub & Jay M. Pasachoff

Harvard University Press, 2002. ISBN 0-674-01006-X, pp. xii + 267. £11.50 (pbk).

Nearest Star is one of several descriptive works on the Sun to have appeared during the recent solar maximum. Its authors are both well-known US solar astronomers. Leon Golub is an astrophysicist working with the Transition Region and Coronal Explorer (TRACE) solar spacecraft, while Jay Pasachoff is familiar to many amateur astronomers as an authority on solar eclipses. *Nearest Star* is written for the non-scientist and avoids mathematics altogether. It aims to present a general description of our current understanding of the Sun and its effects on our planet.

The book is made up of 8 fairly lengthy chapters. I was particularly impressed with the lucid description in the introductory chapter of the various instruments used by astronomers to observe the Sun. Chapter 2 describes how the Sun evolved and how it is predicted to evolve in the future. Present-day solar activity and the sunspot cycle are also covered in this chapter, but some of this latter material might have been better included in chapter 3, which is titled 'What We See' and includes features such as granulation and limb darkening. Chapter 4 discusses the corona and solar flares, as well as phenomena such as solar oscillations. Chapter 5, on solar eclipses, explains not only what happens during a total eclipse but also how eclipse



observations of the corona fill in gaps left by space-based observations.

Chapter 6 is concerned with space missions to study the Sun. It gives a good explanation of why it is necessary to go into space to study many aspects of the Sun and reviews current and future solar observing probes. I would like to have seen more coverage in this chapter of how previous solar missions, such as the solar observatory aboard *Skylab* and the Solar Maximum Mission, enhanced our understanding of the Sun.

The final two chapters concern themselves with the Sun's effects on the Earth. Chapter 7 is about the Sun's influence on the Earth's climate. It includes an excellent description of the many possible reasons for climate change and discusses how much the global warming during the last century has been due to the Sun and how much man-made pollution has been to blame. Chapter 8, on 'Space Weather', could have included more detail on the effects of solar outbursts on satellite communications and other human activities.

I enjoyed reading *Nearest Star* and found the text easy to follow. There are occasional unnecessary repetitions – for example, the discovery of helium in the Sun's spectrum is described twice, in chapters 3 and 5. Also, the authors sometimes use non-SI units such as Angstroms and miles without giving their SI equivalents. The book is not printed on image-friendly paper (apart from a 16-page colour section), but most of the illustrations have reproduced well and have been well-chosen to suit the text. I would recommend *Nearest Star*, for the most part, to anyone with a serious interest in the Sun and its effects on Earth.

Lee Macdonald

Lee Macdonald has been an active member of the BAA Solar Section since 1989 and also observes the planets and deep sky. He is the author of How to Observe the Sun Safely, published by Springer-Verlag in 2002.