

## Review

*The Enigma of Sunspots: A Story of Discovery and Scientific Revolution*, by Judit Brody (Floris Books: Edinburgh 2002), 191 pp., ISBN: 0 86315 370 4, soft cover, £12.99, 149 × 197 mm.

The very source and fount of Day  
Is dash'd with wandering isles of night

In Memoriam,  
Alfred, Lord Tennyson

Though sunspots had occasionally been observed with the naked eye for many hundreds of years, they were only recognized as a regular feature of the solar disk following the application of the telescope to astronomy early in the seventeenth century. This recognition of transient 'blemishes' on the Sun, along with the discovery of Lunar mountains and craters around the same time, helped to overthrow the Aristotelian view of the cosmos, by demonstrating that celestial bodies were not perfect, unchanging and incorruptible and of a completely different nature to terrestrial matter. The Enigma of Sunspots tells the story of the discovery and interpretation of sunspots.

The treatment is largely chronological. Following a brief introduction, the early chapters touch on the solar myths of various ancient peoples and cover pre-telescopic observations, which were more common in the Far East than in Europe. The story proper, however, starts with the telescopic observations by Fabricius, Scheiner (and his student Cysat), Galileo, and Harriot which established sunspots as a regular feature of the solar disk. Following the initial flurry of discoveries and the debate over whether sunspots were really phenomena of the solar surface or small planets orbiting close to the Sun (which would have preserved the Aristotelian perfection of the heavenly bodies) there was relatively little further progress for the remainder of the 1600s and the early 1700s, not least because much of the period was taken up with the 'Maunder Minimum' when there was a dearth of sunspots. In 1769 Alexander Wilson showed that sunspots were depressions in the solar surface by tracking the way that their appearance changed as they approached the solar limb.

Periodicity in sunspot numbers was found by Schwabe in 1843, establishing the famous eleven year sunspot cycle. In 1851 Lamont found similar cycles in the terrestrial magnetic field. At first the

correspondence between the two cycles was not realized, but it was soon established by Sabine, Gautier, and Wolf. In 1859 Carrington accidentally made the first observation of a solar flare and the associated magnetic disturbances. These discoveries laid the groundwork for the modern discipline of Solar-Terrestrial Physics. Having traced these developments the book concludes with a final chapter presenting a summary of the modern understanding of the Sun.

The Enigma of Sunspots is aimed at the layman, or perhaps even at older children. The presentation is non-technical, with no prior knowledge of either physics or the history of astronomy required to follow the discussion. Both pre- and post-Copernican ideas of the structure of the heavens are clearly explained. There are, however, both references and suggestions for further reading. The book is profusely illustrated. There are many reproductions of historical observations, mostly in black and white, or rather in black and tan, giving an attractive appearance similar to a sepia photograph. There are also a number of spectacular, modern, colour photographs showing sunspots and other solar features in great detail. A purist might cavil that these photographs are not directly relevant to the historical narrative, but given the general audience at which the book is aimed they add to its value.

The author was originally from Hungary, but fled that country following the uprising in 1956. She has variously worked as a physics and mathematics teacher, a librarian and a historian of science. She has published several books on aspects of the history of science, and this experience shows in her handling of the material. Potentially obscure topics are explained in a way which is effortless to follow. The book is well produced, with few typographic errors and is very reasonably priced. It is printed on glossy paper, which allows the illustrations to be of a high standard. The book can certainly be recommended for a layman new to the subject; it would make an ideal present for a teenager who is just getting interested in astronomy. Someone already versed in the history of astronomy will find much of the background material familiar, but unless he is an expert in the history of solar observations will doubtless find much of interest too.

Clive Davenhall

