REFERENCES

(1) J. Christensen-Dalsgaard & S. Frandsen (eds.), *Advances in Helio- and Asteroseismology* (Reidel, Dordrecht), 1988


This book is the proceedings of the 154th Symposium of the International Astronomical Union, held in Tucson, Arizona, on 1992 March 2–6. In effect, it describes the opening of a new window in solar physics because, although we have been aware of the infrared Sun for almost two centuries, we are only just beginning to use tools which allow its detailed study — indeed, this is the first major meeting on solar infrared astronomy. To quote Robert Noyes, in the preface to the book, “Why do we care?” There are many reasons why the infrared Sun is of interest. We can observe the Zeeman effect much more effectively than at visible wavelengths; our line of sight penetrates deepest into the photosphere in the near infrared; the physical conditions where solar infrared radiation is formed are such that we expect a near-linear weighting of the Planck function with temperature, and the continuum and spectral-line emissions are formed essentially at local thermodynamic equilibrium. So, there is no question of the usefulness of this branch of solar physics and there is some excitement as the field unfolds.

The book is split into seven sections concentrating on infrared diagnostics of the solar atmosphere; observations of the 1991 total solar eclipse; atmospheric dynamics; atomic physics and line formation; magnetic fields; the infrared spectrum; and technology. The field is covered nicely though one must recognize that the book is made up of a series of papers prepared from conference presentations and, as always, this gives a wide range of styles and qualities, and does leave some gaps in the subject matter. I found the order a little strange — shouldn't the section on the infrared spectrum be near the start, followed by the section on atomic physics and line formation? These ought to lead the sections on diagnostics and dynamics. Furthermore, a book such as this, tackling a new area for many people, should have a substantial introduction aimed at, say, a student reader. The excellent introduction by John Jefferies gives something of an overview, but I would have liked a more extended discussion. To my mind, this is a failing of most conference proceedings. I must admit that the section of this book which appeals to me the most, and makes this a unique volume, is the section on the 1991 July 11 total solar eclipse, which passed over the observatories on Mauna Kea, Hawaii, offering a unique view of the infrared Sun. This opportunity was not wasted, and the results are discussed in some detail. Again, it would have been nice to have a summary paper on the eclipse and the initial findings.

So, the book tells us about the 'state of the art' with respect to infrared solar physics, discusses some exciting and unique observations, and points to the future by discussing future technology. It is a valuable addition to any solar-physics section of a library, though its price will put many off! Nevertheless, the production is of high quality and the text and figures are generally very clear. — Richard A. Harrison.