BOOK REVIEW


The first edition of this book appeared in 1967. Since then a lot has changed and we should be grateful to Dr Durrant for preparing a new edition, which has entailed rewriting much of the book and adding an extra 100 pages. Of the five chapters, the first is a historical survey (much as before), followed by a careful description of the observations. Then come two chapters on theory and, finally, an attempt to connect theories with observations and to construct models of the granules.

A glance through the illustrations shows the striking improvement in observational resolution (despite a deterioration in the quality of reproduction) since the first edition. Balloon and ground-based observations have made it possible to study the morphology and evolution of granules in considerable detail, and observations from space will bring us yet more information in the next few years.

There has also been a boom in theoretical studies of nonlinear convection. This book provides the best available introduction to astrophysical convection, covering fundamental theory, laboratory experiments and the dubious procedures used in stellar models. Particular emphasis is given to convective overshoot and radiative heat exchange; most observations of convection are, of course, confined to a region that is stably stratified and optically thin.

The list of references is extremely full and carried up to 1983. My only regret is that no serious attempt was made to cover the relationship of small-scale magnetic fields to the granulation. All in all, however, this is an admirable book, well written and successful in connecting theory with observation. Every solar physicist should find something of interest in it, and there is much for stellar astronomers as well.

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