particle interactions certainly appears appropriate for plasma-physics students.

The authors' highly individual style shows up best in the final chapter on the molecular theory of fluids, a chapter that was the most interesting to this reviewer but as written seemed to have the least to do with plasma physics. There are statements guaranteed to wake up a sleepy reader. For example in a section on the statistical mechanics irreversibility, the authors discuss memory effects that persist long after a disturbing force has been turned off, and say "... the system which has been disturbed differs in certain occult ways from that which has been left in equilibrium." The authors treatment of kinetic theory and transport phenomena in fluids is impressive and sophisticated and as difficult to follow as in many other books.

This book would be an adequate text for a year-long preplasma physics background course, something which does not exist in most universities. There are some problems scattered through the book, but not enough. The price of the book is so high ($35) that few students or research workers will buy it. Although I think it is a good source book for subjects that plasma physics students should know, I do not think that it can compete with existing books in fluid mechanics, electromagnetism, statistical mechanics, and so on.

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## Early Solar Physics

**A. J. Meadows**

312 pp. Pergamon, New York, 1970. Hard, $7.00, Paper $4.75

This is an excellent and very reasonably priced treatise; not only students, but also the professionals in astronomy, physics, and the history of science will read it with fascination. By the term "early solar physics" the author means roughly 1850 to 1900, which indeed is the very period in which a consistent picture of our understanding of the Sun began to emerge. The author quotes Samuel P. Langley (this hitherto rather underestimated scientific genius), who wrote in 1888: " ... a new branch of astronomy has arisen ... sometimes called celestial physics ... and sometimes referred to as the New Astronomy."

A short introductory chapter provides a condensed general background and is followed by some 60 pages of a clear discussion of the growth of our insight into the real nature of various solar phenomena—sunspots, flares, temperature effects, chromosphere, prominences, corona, solar structure and solar energy. A closing section deals with "the new era of Solar Physics," culminating in George Ellery Hale's work at Mount Wilson Observatory. The remainder of the book is devoted to the splendid idea of bringing the outstanding researchers themselves to the speaker's forum, and on more than 200 pages we have the rare pleasure of listening to them through relevant extracts from their pioneering

publications. Here we find the nuclei of 27 papers, including Heinrich Schwabe (1843), Hermann Helmholtz (1854), Richard Carrington (1858, 1860), Gustav Kirchhoff (1860, 1861), Hermann Vogel (1864), Sir Joseph Lockyer (1866, 1868, 1869), Pierre Janssen (1868, 1871, 1879), Jonathan Lane (1870), Charles Young (1879, 1883), William Campbell (1899), Langley (1901), John Evershed (1901), Karl Schwarzschild (1906) and Hale (1908).

The demarcation line between "early" and "modern" is drawn by A. J. Meadow through the year 1913, when the rise of Niels Bohr's atomic work made it evident that "solar physics was ready to move ahead into the modern era." To read this lucidly written book, filled to the brim with fruits of a rich harvest, is most encouraging and a sheer delight.

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## University Optics, Vol. 1

**D. W. Tenquist, R. M. Whittle, J. Yarwood**

349 pp. Gordon and Breach, New York, 1970. $24.50

This is a British college text, printed in Hungary and offered in the US to fill no visible need. It is written "for the student preparing for Part I of an Honours Degree in Physics," etc. It covers the time-honored subjects in a traditional way, geometrical optics, in-