tions and it would have been most valuable to illustrate some of *their* system engineering problems. However, Goode and Machol have made a good start, and have produced an interesting book to boot. It is to be hoped that the books which will undoubtedly follow and extend their exposition will be able to maintain a similar degree of interest.

Physics in Meteorology. By A. C. Best. 159 pp. Pitman Publishing Corporation, New York, 1957. $3.75. *Reviewed by S. F. Singer, University of Maryland.*

This little volume is written at a very simple level and serves as a fine introduction for physicists to meteorological problems. The author, who is Deputy Director of the British Meteorological Office, starts with a short discussion of meteorological instruments and then treats various special aspects of meteorology: the microphysics of clouds; radiation problems within the atmosphere, between the ground and the atmosphere, and into space; and the general question of the heat balance of the earth. A descriptive approach is given on the subject of atmospheric electricity, the production of thunderstorms and lightning. Dynamical meteorology as such is not discussed, but there is a brief treatment of large-scale winds and of the turbulence in the atmosphere, again on quite a descriptive level. Meteorological optics and acoustics and radiometeorology complete the treatment of physical problems. The latter chapter is quite detailed; it takes up propagation of radio waves and the effects of fog and precipitation. Finally, there is a brief account of the present state of work on weather control. The reviewer notes a lack of references to recent papers, or even to recent books, such as the *Compendium of Meteorology,* or to texts on physical meteorology.

Nuclear Reactor Physics. By Raymond L. Murray. 317 pp. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1957. $7.50. *Reviewed by R. Hobart Ellis, Jr., New York City.*

In the rapidly developing field of reactor physics there are remarkably few books. Designers are basing calculations on journal articles, class notes, AEC documents, and personal communications. Students study the classic Glasstone and Edlund and engineering texts like Richard Stevenson's *Introduction to Nuclear Engineering.* In Professor Murray's new book they will now have their second-course text—a presentation of the more subtle aspects of reactor behavior previously to be learned only from original sources.

The author introduces his subject briefly in his first two chapters. Basic equations are stated with little or no derivation. Then come computations of critical masses, transient analysis, temperature effects, and one-, two-, and multigroup computations of neutron behavior.

The novice will find the book difficult and will do well to understand his basic concepts well before attempting this text. When average logarithmic energy decrement is derived, for example, the uninitiated may not notice that it is independent of energy and may miss the significance of this important fact. He is not told about it. It will be difficult for him to get much feel for diffusion length when he suddenly comes upon a definition of its square in terms of other parameters with no discussion of its physical significance.

Even the better informed reader may object to a poor job on the part of the editor. He has not contributed to the ease of reading and understanding as he should have. The distinction between "may" and "can", for example, has disappeared. Hyphens do not connect the parts of compound modifiers in order to make quickly recognizable such distinctions as that between "fast reactor control" and "fast-reactor control". His hyphens stand instead where they don't belong as in "slowly-varying". But these are quibbles to most physicists, who will not mind re-reading many of the sentences in a short book to see just what they mean.

Let us differ, then, with the man who wrote the jacket blurb and thinks that this is "a logical and straightforward presentation of theory". It is rather an adventure into the presentation of material that is newer and more advanced than is to be found in most of the existing texts. It is concise rather than logical. Explanations and derivations have been omitted or abbreviated to make room for a wealth of material. The man who is designing reactors, however, will find at his fingertips the numbers, formulas, and concepts of his business in a compact package.

Proceedings of Symp. on Astronomical Optics and Related Subjects (U. of Manchester, Apr. 1955). Edited by Zdeněk Kopal. 428 pp. (North-Holland, Holland) Interscience Publishers, Inc., New York, 1956. $12.50. *Reviewed by V. Twersky, Sylvania Electronic Defense Laboratory.*

The forty-six papers of this volume and the historical introduction by the editor are essentially the proceedings of a symposium held at the University of Manchester, April 19–22, 1955.

The first chapter consists of five papers on information theory and optics. These include general extensions of the theory to spatially extended "messages", as well as specific problems. For example, Gabor's work indicates that broadening the diffraction pattern of a double star improves the accuracy of measuring the separation at the expense of position: "spoiling the instrument" is an aid in collecting additional information on partially known objects.

The ten papers on optical images and diffraction of Chapter 2 range from Linfoot's paper on optical image assessment to Spencer's survey of radio antennas. Wolf's survey of partially coherent fields is the first of the four papers on interferometry and coherence problems of the following chapter. Chapter 4 contains seven papers dealing primarily with photo-electronic devices for obtaining pictures of star fields and for recording very faint spectra; these devices may lead to increased sensitivity (so