elements such as chemical rate processes, kinetics of transport phenomena, fluid dynamics, and thermodynamics. The particular aspects of combustion contributed by various authors include thermodynamics of combustion, chemical kinetics of combustion, flame propagation in gases, combustion of liquids and solids, detonation processes, and energy production by nuclear reaction.

An attempt has been made by the editors to present a coordinated account rather than merely an assembly of reviews. In this difficult task the editors have been fairly successful although some duplication of subject material does occur, such as, for example, in the analysis of heterogeneous combustion which is treated in three different chapters and in the treatment of gas flow with phase change which appears in two separate chapters of the book. The volume offers a special service to the reader by making available to him a large list of references to reports which in many cases have not appeared in the open literature. These detailed bibliographies attached to each chapter of the book are a necessary adjunct to the treatment of the subject material which in some instances shows only the results and conclusions of certain studies without much additional detail. The book is most suited for the reader who wishes to obtain a quick and up-to-date account of various topics related to combustion processes and to the specialist who will want to refer to the numerous references quoted.

An Introduction to Reactor Physics. By D. J. Littler and J. F. Raffle. 196 pp. McGraw-Hill Book Co., Inc., New York, 1955. $4.50. *Reviewed by E. Richard Cohen, North American Aviation, Inc.*

The wartime development of nuclear reactors was covered by security restrictions. These have now been lifted; a great mass of information is available in the open literature on the technology and engineering of reactors for research and power. The physics of nuclear reactors, however, has not yet been properly collected into an adequate text. The reason for this lies in the fact that, of all the top scientists in this country who had a part in the development, only Wigner has maintained an active association with the field; now that the books can be written the men who did the work are not available to write them.

Although Littler and Raffle's book does not solve the problem (nor is it intended to), it is an additional step in the right direction. Inevitably the book will be compared to Glasstone and Edlund's *Elements of Nuclear Reactor Theory;* it is quite similar in scope, and even in origin (it bears the imprimatur of the United Kingdom Atomic Energy Authority), but is on a somewhat more elementary level. In the first four chapters, *An Introduction to Reactor Physics* discusses briefly the background material of nuclear structure, radioactivity, and fission. The treatment of neutron diffusion is restricted to elementary considerations and there is no mention at all of transport theory or the various spheri-

cal harmonic expansion methods. The discussion of reactor physics which follows is limited almost exclusively to the specific design of graphite moderated, gas cooled, natural uranium reactors which are now being built in the United Kingdom and the calculation of criticality is accompanied by a detailed numerical example which is based on the BEPO reactor. A short introduction to reactor kinetics, shielding, radiation detection, and radiation damage in solids rounds out the survey.

As a short general introduction to the subject for engineering courses, the book should prove quite useful, but the text that will present reactor physics in what Dr. Alvin Weinberg has called "the scholarly tradition" has not yet appeared.

Relativity: the Special Theory. By J. L. Synge. 450 pp. (North-Holland, Holland) Interscience Publishers, Inc., New York, 1956. $10.50. *Reviewed by P. M. Morse, Massachusetts Institute of Technology.*

It is interesting to compare this volume with Panofsky and Phillips' *Classical Electricity and Magnetism*, for the two are mutually complementary. Panofsky and Phillips are physicists, and while they do not discuss the experimental basis of their subject, their exposition exhibits the inductive slant that is so necessary for an experimental science. The point of view in Synge's book is deductive, on the other hand. It starts with a definition of distances and coordinates in space-time, in terms of clocks and light beams, and from these, by theorems and geometric reasoning, deduces the Lorentz transformation and its consequences. Panofsky and Phillips start with electromagnetic theory, bring in special relativity as an analytic consequence of the Maxwell equations and direct their exposition toward the quantum theory; Synge starts with the geometry of the Lorentz rotation in space-time, brings in electromagnetism as an interesting application and directs his exposition toward general relativity and cosmology. Both points of view merit the attention of the student.

This reviewer found the thoroughgoing use of geometric reasoning in Synge's book both interesting and helpful. Of ten chapters the first four are concerned with the Lorentz rotation and its geometrical implications. The general space-time rotation is carefully analyzed into elementary space and time rotations and the representation of these rotations by means of spinors is discussed in some detail.

In the fifth chapter the connection between this space-time geometry and physical phenomena is first introduced, with a discussion of the Doppler effect, the effect on light of moving media, and the connection between red-shift and the expanding universe. The sixth chapter deals with the mechanics of a particle and with the relativistic aspects of the various collision phenomena encountered in nuclear physics. The seventh chapter treats systems of particles, angular momentum, and the two-body problem in special relativity.

The seventh chapter, a long one, contains a more