discussion of the photoelectric effect, he is expected to realize, without further comment, that the slope of a plot of photoelectron energy against incident light frequency yields the Planck constant. In another place it is stated that the binomial theorem may be used to reduce the expression for the time difference in the analysis of the Michelson-Morley experiment. Fifteen pages later the theorem is described for the first time. Finally, it must be added that the problem is not eased any by the infrequent but unabashed use of exponentials and derivatives.

The second edition of *Fundamental Physics* should prove useful as a textbook for any course on "liberal-arts physics" that adheres strongly to the encyclopedic approach and devotes sufficient lecture time to a review of mathematics. However, the book will be of small value in those courses on basic physics whose paramount ambition is to reveal the fundamental concepts and principles that hold the science together.

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## Well loved model

HIGH ENERGY NUCLEAR REACTIONS. By A. B. Clegg. 130 pp. Clarendon, Press, Oxford, 1966. Paper $2.90

*by Walter Benenson*

*High Energy Nuclear Reactions* is a recent addition to the series of monographs that is called the Oxford Library of the Physical Sciences. The subject matter is nuclear reactions produced by nucleons of energy 100 MeV or more. Experimental data presented are mainly of nuclear reactions produced by protons from 150–200 MeV synchrocyclotrons. Nuclei investigated are for the most part light, with $C^{12}$ and $O^{16}$ receiving a great deal of the attention. The author, Arthur B. Clegg of the University of Oxford, is a leading contributor to this field of research.

Most of his attention is to experimental results that can be well understood theoretically. These are nuclear reactions in which a relatively simple change is made in the target nucleus. The author refers to these in his preface as "nuclear reactions I have known and loved." Elastic and inelastic scattering as well as nucleon-knockout and cluster-knockout reactions are discussed. The theoretical model for the reaction mechanism is a collision between the incident nucleon and a single nucleon in the target nucleus. Although the author makes clear why the model should work, its main justification is that it works well. The success of the model for the nuclear reactions is an optimistic prediction for the productivity of the next generation of isochronous cyclotrons of 100 MeV and more. These machines are being actively sought or designed at many laboratories throughout the world. One can be sure that Clegg's book will be a reference well used by those proposing to build these machines. Indeed the only addition one would desire is a chapter about future expectations such as what would be done with higher energy, resolution and beam current.

*High Energy Nuclear Reactions* can be recommended as physics literature. It is not a compendium of data, references, or reprints but an attempt to set forth intelligibly the progress of a productive field of physics. It is well written and well organized throughout and makes unusually good reading.

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## Engineering probability

ELEMENTS OF PROBABILITY THEORY. By J. Bass. Trans. from French by W. McKay. 249 pp. Academic Press, New York, 1966. $9.75

*by Thomas Kailath*

In the last few years there has been a sudden increase in the number of textbooks on probability theory, most of them directed towards engineering and physics students. The present book, a translation of a French text, is probably one of the best, especially for