simple drawings to the text. These supplement very nicely some 70 photographs, many of which are superb. One by Laurence Lowry, showing the eastern end of Martha's Vineyard, Chappaquiddick Island, Nantucket Sound, Cape Cod, and Massachusetts Bay, is on the cover of this issue of *Science*; another, showing the meanders of the White River near Edwardsport, Ind., is reproduced with this review.

SHELDON JUDSON
Department of Geology,
Princeton University

Free Associations. Memories of a psychoanalyst. Ernest Jones. Basic Books, New York, 1959. 264 pp. $5.

The author of this book, Ernest Jones, was one of the principal contributors to, and developers of, the psychoanalytic theory of personality organization and function. This small and somewhat fragmentary autobiography was interrupted by his death in 1958.

Whatever one's personal views of psychoanalysis as a discipline may be, and I am favorably inclined towards it, Jones' somewhat abbreviated autobiography has severe limitations. Perhaps some of this reaction has to do with the level of expectation with which I approached the book and my subsequent disappointment in it.

It is likely that Jones' reminiscences about his early years will be a matter of interest to his intimates and to those who attach a sentimental significance to him, but they have little to recommend them to the general reader. Because his self-revelations are so fragmentary they do not provide the broad view which one would need in order to obtain a better understanding of the man. While the book is titled *Free Associations*, unfortunately the content is neither free enough to give the reader a reasonable sense of the scope of the man, nor disciplined enough to give the associations an inner coherence. This stands in striking contrast to Jones' earlier contributions to the theory and practice of psychoanalysis, which are marked by his logically consistent and definitive style.

For those who have a particular interest in the development of psychoanalysis as a "movement" (although Jones deplored the widespread use of this term), the latter part of this book has many pertinent historical references. One is impressed by Jones' enthusiasm for the newly developed perspective of personality development, and by the intensity of his drive to communicate the findings to others. The violence of his response to views which deviated from the classically psychoanalytic ones is one of the more remarkable aspects to be observed. These responses are presented with a degree of candor which, while it is hardly one of the more flattering aspects of psychoanalysis, throws light on the impact of radically new ideas in any sphere of science. Such new ideas are significant, among other ways, both as things in themselves and as disrupters of the usually definitive social hierarchy within a given field of endeavor. Then, of course, as the new system of ideas becomes intrenched, it in turn establishes its own hierarchal structure.

SAMUEL NOVEY
Baltimore, Maryland

Handbuch der Physik. vol. 44, *Nuclear Instrumentation*, I. S. Flügge, Ed. Springer, Berlin, 1959. vii + 473 pp. Illus. DM. 125.

"Nuclear Instrumentation on a Grand Scale" would be an appropriate title for volume 44 of the *Handbuch der Physik*, which is titled simply *Nuclear Instrumentation*, I. The articles contained here describe the major pieces of nuclear physics instrumentation, the heavy machines most commonly associated with modern experimental physics.

One does not blindly set out to build devices such as are described in these eight articles, and as a consequence, the most interested reader will already be familiar with the general theoretical discussions presented here. It is the specific comments about specific machines that make these articles most lively; the lore of machine building is well represented in this volume of the *Handbuch*.

The first article, by E. Baldinger, presents a thorough treatment of rectification circuits and then discusses cascade generators. R. G. Herb's discussion of Van de Graaff accelerators contains some sage advice for the would-be builders of such machines who would also like to work in experimental physics: "A faithful copy of a generator that is operating can be safely predicted in regard to performance." And conversely!

The magnetic accelerators—cyclotrons and synchrocyclotrons, electron synchrotrons, and betatrons—are discussed by Bernard L. Cohen, Robert R. Wilson, and Donald W. Kerst. Cohen's article contains an interesting tabulation of the characteristics of a large number of cyclotrons and an excellent treatment of the theory and the headaches (the practice) of cyclotron construction and operation.

George K. Green and Ernest D. Courant (Brookhaven National Laboratory), have written a monumental article on proton synchrotrons; they draw heavily on the experience with the Brookhaven, University of California Radiation Laboratory, Birmingham, and Dubna machines. The design features of the alternating gradient synchrotrons at Brookhaven National Laboratory and at the laboratory of the European Organization for Nuclear Research (CERN) are outlined. The latter is now in operation.

Linear accelerators—electron, proton, and heavy ion—are discussed by Lloyd Smith. An article by D. J. Hughes contains selected topics on reactor techniques of particular interest to nuclear physicists.

Very little of the material in these articles will interest those experienced in the design and operation of "his machine," except for comparison purposes. These articles will be of great use to those who wish to be brought up to date on machines with which they are not well acquainted.

JOHN D. FOX
Department of Physics,
Florida State University

The Gentle Art of Mathematics. Dan Pedoe. Macmillan, New York, 1959. 143 pp. Illus. $3.50.

This is a book for the intelligent layman who wants to know something about modern mathematics and is willing to work a little to attain this knowledge. It starts out entertainingly enough with a discussion of mathematical games. These are used to acquaint the reader with number systems other than the familiar decimal system, although their use in electronic computers is not even mentioned. The next chapter discusses the theory of probability and its many opportunities for paradox. More paradoxical ideas are introduced in the following chapter, which discusses infinity and introduces