

Book Reviews

1960 Nuclear Data Tables; Part 4, Short Tables. Compiled by: K. WAY, J. B. MARION, S. M. SHAFROTH, K. W. FORD, A. M. KAUFMAN, G. H. FULLER, L. J. LIDOF-SKY, E. DE MATEOSIAN, AND M. McKEOWN. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. \$1.50.

This volume constitutes the fourth part of the 1960 Nuclear Data Tables. It has as its objective the distribution of tabular material of interest to the low energy nuclear physicist. The first of the six sections of the volume is a supplement to the well known Directory to Nuclear Data Tabulations.¹ It extends the coverage to the period December 1958 to June 1961. The notation and classification is the same as that used in the parent volume. No significant omissions to this supplement were noted but some of the listings were felt to be outdated chronologically and technically. In some instances, a tabulation was cited under more than a single heading. It is not the fault of the directory that the coverage of the low energy physics field is remarkably spotty. Any such directory is at the mercy of the fashions of the time. Interestingly, some of the tabulations listed make certain of the succeeding portions of this particular volume redundant.

The second part of the Short Tables consists of a tabular summary of theoretical and experimental studies of elastic and inelastic scattering of charged particles. In reality, this section is a bibliography containing too little information to constitute a summary. Judged as a bibliography, it is accurate and inclusive.

The third and fourth sections are short tables dealing respectively with nuclear charge distributions (theoretical and experimental) and nuclear moments. To the reviewer these are relatively foreign fields, but when these tables were used as sources in the treatment of problems that have recently faced the author, they proved satisfyingly quick and accurate. This was particularly true of the tabulation of the theoretical distribution of nuclear charge within the nucleus.

The last two sections of the Short Tables pertain to beta and gamma disintegrations. The beta decay processes are listed by mass number. Only beta groups having the highest energy or greatest intensity in a given decay are tabulated. This method of selection can lead to a certain ambiguity in some instances. Fortunately, a complete referencing enables the reader to rapidly resolve such questions and to acquire more detailed information. The characteristics of the beta processes including energies, lifetimes, $\ln ft$ values, etc. are given. In conjunction with a given beta decay, the energies of the gamma rays leading to the product nucleus

are given. Thus, it is possible to readily determine the respective mass differences. The numerical values listed are averages determined by the compiler. The discretion shown in ascertaining these averages from the profusion of material available is judged to be good. Gamma rays are tabulated by energy and by Z and A . Lifetimes, intensities, and modes of decay are stated. Unfortunately the gamma-ray tables compress a very great deal of information into so restricted a space that much detail is omitted. This compactness could serve a useful purpose if references to the basic literature were given. They are apparently totally lacking.

It is the custom of the reviewer, when examining volumes such as this, to lay a copy upon the console of an accelerator used in low energy nuclear physics work. The amount of interest shown in a volume so placed is at least a provincial measure of its usefulness. This test has been applied to several parts of the 1960 Nuclear Data Tables. Particularly notable interest was shown in Part 3. Part 4, the subject of this review, was little used. It is felt that this volume will be most valuable to those who are interested in only cursory insight into strange fields. The serious worker will be familiar with and tend to refer to more detailed well known reviews he will normally have close at hand.

A. B. SMITH

*Argonne National Laboratory
Argonne, Illinois*

(About the Reviewer: Dr. A. B. Smith is a senior physicist at the Argonne National Laboratory where he is the head of the Applied Nuclear Physics Section of the Reactor Division.)

The Collected Papers of Enrico Fermi, Volume 1, Italy 1921-1938. Edited by: E. AMALDI, H. L. ANDERSON, E. PERSICO, F. ROSETTI, C. S. SMITH, A. WATTENBERG, AND E. SEGRÈ (Editor-in-chief). The University of Chicago Press, Chicago, and Accademia Nazionale Del Lincei-Roma. 1043 pp. \$15.00.

The first volume of the collected papers of Enrico Fermi, carefully and no doubt lovingly prepared by Amaldi, Persico, Rasetti and Segrè, comes as a very welcome tribute to the memory of Fermi. Leafing through the volume filled this reviewer with a sense of pleasure and nostalgia. Pleasure, because the next best thing to conversing with Fermi is to follow his brilliant reasoning in these papers. Nostalgia, because one is reminded of the magnificent period in the development of nuclear physics when modest experiments could give such interesting results and when the theory was, by modern standards, so directly related to the experiments at hand.

The book is considerably more than just a convenient collection of papers which after all exist separately in the literature. In the first place, Segrè has written a most

¹ Directory to Nuclear Data Tabulations, R. D. GIBBS AND K. WAY. U. S. Government Printing Office, 1958.