page. The theoretical part is much too brief and contains reference only to work which is 20–30 years old.

To me the least satisfactory contribution to the whole volume is the first chapter by Schaaffs on the production of x-rays. It is a very generalized introduction into the subject which could be easily replaced by shifting the material to the individual chapters where they are treated more in detail. On the whole, it does not contain very much that isn't found elsewhere and sometimes even that much is presented in a rather unsatisfactory manner. The best part of this material is where the author deals with his own specialized pet subject which is the production of very short x-ray pulses, but paragraphs like those on the betatron would better be left out, because the treatment is inadequate. Likewise, the presentation of x-ray protection measures is, in view of the present state of the art, highly inadequate.

A few more words are needed as general comments. The book as it stands is a very good introduction into the experimental aspects of x-ray physics. The theoretical aspects are largely missing (Tomboulian's paper is the only one going into the interpretation of soft x-ray spectra of solids). I failed to see any reference to another volume of the *Handbuch* which contains the relevant theory. I hope I am mistaken and the theoretical treatment is given somewhere else, but if I am not, I would like to voice a request for remedying this situation in a supplement to Vol. XXX.

Trilinear Chart of Nuclides (2nd Revised Edition). By William H. Sullivan. (US Atomic Energy Comm.) US Government Printing Office, Washington, D. C., 1957. Paperbound $2.00. *Reviewed by Katharine Way, National Academy of Sciences—National Research Council.*

The present chart is the successor of several Manhattan Project efforts to collect in one place the principal facts that reactor people have to have at their fingertips, namely the characteristics of the different fission product decay chains and the quantity and quality of activity that will result from the exposure of any given element or isotope to a slow neutron flux. This modern version seems to the present reviewer not only to succeed excellently in the old aims but to satisfy new needs as well.

A hexagonal area shows for each known unstable nucleus the half-life, decay mode, radiation energies and intensities, and degree of certainty of mass assignment, and for each stable nucleus the relative isotopic abundance, mass, spin, magnetic moment, and slow neutron absorption cross section. For natural elements both the absorption and scattering cross sections are given on the element lines. The adopted layout puts the nuclei in β decay chains on almost vertical lines and the isotopes of an element on lines making approximately 45° angles with these. This results in getting the whole chart on long, fairly narrow sheets which are arranged in heavy cardboard binding to open up in a convenient accordion style.

The arrangement makes it particularly easy to find information on β decay and to note genetic relationships. The inclusion of a line showing the course of the bottom of the potential valley makes for quick orientation as regards β energetics. Fission yields for the slow neutron fission of U^{235} which are given at the tops of the relevant chains show at a glance the importance of the chain in a thermal reactor.

It is possible to note quickly all the activities that will result from slow neutron irradiation of any natural element or artificially produced collection of isotopes and from the information given directly on the chart to calculate the relative amounts of such activities that will be produced.

The two main needs of the reactor scientist or engineer are thus admirably taken care of. But there are many other uses for the chart such as identification of possible products from charged particle nuclear reactions, the tracing of α decay chains, the study of relationships among natural abundances, etc.

The print is large and clear. The only real criticism of this reviewer is the policy adopted for isomers. In many cases γ-emitting states whose half-lives are of the order of 10^{-9} seconds, are treated as "isomeric" states and allotted separate areas of one of the hexagons. This treatment seems to result in undue cluttering and in the creation of false impressions. A policy of adopting a lower limit, say a second, below which half-lives would not be treated as "isomeric" might be preferable. It is also a little surprising to see C^{12}, for instance, allotted an "isomeric" state with an "instantaneous" half-life for decay into three alpha particles.

The general impression, however, is that of a job most carefully and conscientiously done. This second edition of the Sullivan chart at a modest price is a tool for which any one concerned with nuclear physics or chemistry will find daily uses.

The Hypercircle in Mathematical Physics: A Method for the Approximate Solution of Boundary Value Problems. By J. L. Synge. 424 pp. Cambridge U. Press, New York, 1957. $13.50. *Reviewed by W. C. Rheinboldt, National Bureau of Standards.*

The book describes the so called hypercircle method, invented by the author, together with W. Prager, and shows its applicability by means of many examples. Up to now this method is to be found only in original publications and it is therefore very commendable that this interesting technique in the theory of boundary value problems of partial differential equations is now available in the form of a textbook.

The method is based on the fact that often the solution of a boundary value problem, regarded as a point in function space, is the intersection of two orthogonal linear subspaces. Having selected a finite number of points in both subspaces one can define a hypercircle on which the solution is located. This provides bounds for the solution, and furthermore if the radius of the hypercircle is small any point on it is a good approximation