Book Reviews

Radioactive indicators: their application in biochemistry, animal physiology, and pathology. George Hevesy. New York-London: Interscience, 1948. Pp. xvi + 556. (Illustrated.) $10.00.

The first application of tracer methods in biological research was made by Prof. Hevesy in 1923. With this book Prof. Hevesey—whose achievements as both initiator and foremost exponent of the use of tracer methods in many aspects of physiology and biochemistry were recognized in 1943 with the award of the Nobel Prize in chemistry—has marked the 25th anniversary of his fathering of tracer methodology. The subject matter is organized meticulously to cover tracer researches in animal physiology, biochemistry and pathology and is presented with characteristic lucidity. It has been announced that a volume dealing with plant physiology is in preparation.

Topics treated most thoroughly relate to the interest of Hevesy and his collaborators in investigations of whole organisms. There is an amazingly complete coverage of literature dealing with absorption, retention, turnover, and excretion of various metabolites, particularly those involving the mineral components phosphorus, iodine, and iron. Much data previously available only in journals difficult to obtain are made easily accessible for the first time.

The mere inclusion of such a wealth of material (over 900 references are cited) has involved an enormous amount of work, since no small fraction of the data undoubtedly required considerable reworking for adequate treatment. Insofar as is possible, an integrated presentation of these data has been undertaken. Extensive treatment of the fundamental concepts involved in tracer work, however, has not been possible. The over-all result is a volume with an appearance perhaps more of a compendium or reference than a text. In any case Dr. Hevesy has performed an extremely important service in bringing a measure of order into the chaos of literature dealing with tracer researches on absorption and turnover.

The merits of this treatise might be enhanced by a few shifts in emphasis. Thus, although detailed descriptions of mechanical devices, such as those used for automatic counting, are provided, fundamental phenomena and considerations relating to functioning of assay instrumentation are accorded either brief or only passing mention. For example, the correction for nonlinearity of response of a G-M counter at high counting rates is remarked only in one brief sentence in small print (p. 52). The statistical nature of G-M counter determinations is treated in a single page. The discussions of various formulas relating to turnover calculations should also have been extended.

There is evidence of very careful proofreading. Grammatical errors, as well as errors in references cited, are surprisingly few for a first edition. Tables and figures are clearly reproduced. An added feature is the inclusion of an isotope chart as compiled by E. Segrè.

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Pulse generators. G. N. Glaso and J. V. Lebacqz. (Eds.) New York-London: McGraw-Hill, 1948. Pp. xiv + 741. (Illustrated.) $9.00.

This book is volume 5 of the excellent MIT Radiation Laboratory Series of 28 volumes describing radar and radar techniques. While the title is probably reasonably apt for those who have not been in the radar field, most radar workers would have chosen "Magnetron Modulators" as a title. Virtually everything in the book relates to current-voltage pulses of duration and magnitude found convenient for radar magnetrons during the war, and devices for producing such were usually called modulators.

Specifically, the range covered in this book is from about .03 to 5 microseconds' duration, 1 to 60 kv on voltage and from 100 watts to 20 megawatts on power. This material is covered in 15 chapters which are broken up into three groups. In the first group is "The Hard Tube Pulser," which uses a vacuum tube as a switch to connect and disconnect an energy storage device (usually a simple condenser) and the load. The second group considers "The Line-Type Pulser," in which an artificial transmission line not only stores the energy but also determines the pulse shape on being connected to the load by means of a spark gap or hydrogen thyratron. The third group of chapters presents "Pulse Transformers." There are also appendices on "Measurement Techniques" and "Pulse Duration and Amplitude."

As a whole the book is very well done and the present reviewer has found it useful, interesting, and informative. Especially noteworthy is the fact that, in spite of the rather large number of contributing authors (13), there appear to be neither large gaps nor duplications.

On the other hand, much of the section on pulse transformers has been spoiled, for the present reviewer, by the author's "explanation" of many formulae by a rather nebulous analogy between thermodynamics, or possibly statistical mechanics, and transformers. This analogy is perhaps most clearly stated on page 501, and the fact that this assigns two degrees of freedom to a single mesh circuit does not inspire confidence. The analog is used to "explain" a result usually derived by the maximum-minimum methods of first year calculus. In fact, all the results the reviewer has checked seem to be correct, but because of the "thermodynamic" reasoning, the reviewer will not feel that the statements in these chapters are reliable for quick reference until he has verified them.

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