# Book Reviews

*Millimicrosecond Pulse Techniques.* I. A. D. Lewis and F. H. Wells. McGraw-Hill, New York; Pergamon Press, London, 1954. iv + 310 pp. Illus. + plate. $7.50.

The field of very short pulses is a quite difficult one, and the experimenter is hampered by having no equipment to view the pulses whose indication can be completely believed. For this reason, any help he can get is greatly appreciated. This book provides a considerable amount of good advice and many references to more.

The first chapter contains a quick review of circuit analysis and the application of the Fourier and Laplace transforms to the problems of transient analysis. The second and third chapters are devoted to an exposition of the use of transmission lines both for the transfer of short video pulses and as circuit elements for forming or modifying pulses. The discussion also includes the use of coupled lines for pulse inversion. Chapters 4–6 describe the design of pulse generators, amplifiers, pulse discriminators, and cathode-ray oscilloscopes for millimicrosecond pulses. The last two chapters discuss application of short-pulse equipment to numerous problems in nuclear physics and other fields of physical measurement.

The treatment of transmission-line problems is very good and quite detailed. The effects of changes of dimension without change of impedance, support beads, and terminations upon pulse shape are considered. Chapter 3 is concerned mostly with the use of tapered transmission lines, either plain or helical, as pulse transformers for increasing or decreasing pulse size, for impedance matching, or for pulse inversion with or without a change of pulse size.

The next chapter, dealing with signal generators, describes most of those in general use for testing equipment using millimicrosecond pulses. It includes the contact type (of which the mercury-switch pulser is a familiar example) as well as the gas tube and secondary emission-tube types. This section, and indeed the whole book, has a quite extensive bibliography that gives a useful starting point for those who do not follow the literature on this subject.

The chapter on amplifiers includes the circuit considerations and some details of the design of 100- and 400-megacycle wide amplifiers for oscilloscope use. The limitations of cathode-ray tubes when they display pulses with swift rise and fall are considered at length in Chapter 6, and the performance of some tubes is illustrated. Time base circuits giving sweeps as short as 4 millimicroseconds are shown.

The last two chapters on applications should be useful to many experimenters. Many coincidence arrangements are shown, including the exceedingly useful and widely used fast-slow coincidence circuits that are required for coincidence with energy selection. The only thing lacking is a good discussion of the statistical problems that enter into the choice of the type of coincidence circuit and the time constants of the various sections of the circuits. A short discussion of time interval analysis and multichannel time analyzers is included in this section.

In general, this book provides a survey of millimicrosecond methods and an excellent bibliography for further reading, although the section on transmission lines is exceptionally detailed and by far the best I have seen.

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*Endemic Goiter.* The adaptation of man to iodine deficiency. John B. Stanbury, Gordon Brownell, Douglas J. Riggs, Hector Perinetti, Juan Irdiz, and Enrique B. Del Castillo. Harvard Univ. Press, Cambridge, 1954. xii + 209 pp. Illus. $4.

This treatise on endemic goiter is based on observations made with modern tools of study by a group of investigators from the Massachusetts General Hospital and the Harvard Medical School, in collaboration with several endocrinologists from Argentina. The study was made on a large group of goiterous people in Mendoza, an Argentine province situated on the western slope of the Andes.

The monograph is divided into three sections. The Mendoza endemic goiter and the methods of study are first described, then the functional interrelationships observed in these goiterous people, and, in the last section, the authors present certain theoretical aspects of iodine metabolism with practical mathematical formulas that are applied in evaluating and interpreting the studies.

The studies that were made on these goiterous subjects included the determination of serum hormonal iodine, urinary iodine, and the thyroid's avidity for and the fate of radioactive iodine. The effects of iodine in small and large doses, desiccated thyroid, and methimazole were defined, and the effects of the thyroid-stimulating hormone on these indices of thyroid function were also defined. The results indicate that man is able to adapt himself in a remarkable fashion to an iodine-deficient state and maintain himself in a state of euthyroidism.

This monograph will probably not be of practical value to the practising physician. However, it should be of great value to experimental endocrinologists and biophysicists. Those engaged in studies of thyroid physiology and of iodine metabolism will find the theoretical aspects of iodine metabolism and the mathematical formulas most valuable.

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