cannot go into detail. Thus it should be a very useful secondary text, to give the student an alternative point of view, or a book to read when reviewing the subject.

In order to compress the subject into 329 pages, the author has had to omit sets of problems and has had to emphasize only one aspect of the whole field. He has chosen to concentrate on the aspects of forced motion important in electric circuit and communications problems, at the expense of those aspects more useful in field theory and quantum mechanics. His chapters on Fourier and Laplace transforms, transient analysis, and difference equations are excellent and go into more detail than was possible in the rest of the book. Except for the disadvantage of the lack of problems, this book would be well worth considering as a text for a course in mathematical methods given to engineers or applied physicists. The index is a bit brief.

Science and Information Theory. By Leon Brillouin. 320 pp. Academic Press Inc., New York, 1956. $6.80. *Reviewed by R. W. Hellwarth, Hughes Aircraft Company.*

Information theory has become, in the words of Shannon, "something of a scientific bandwagon" onto which investigators in all reaches of science have jumped. Brillouin in *Science and Information Theory* has judiciously confined his subject matter to the major accomplishments in the purely objective statistical theory which have arisen from Shannon's investigations, and the implications of this work to the physical sciences through the thermodynamical or entropy interpretation of information.

The book is intended for those at the graduate engineering or physics level and requires of the reader only familiar mathematical tools and basic physics. It is quite self contained with numerous "asides" and proofs on such topics as Fourier analysis, thermodynamics, and simple quantum physics as each is needed in the course of an argument. As it is then, the book is of lesser interest to the mathematician or advanced investigator, as it chooses not to develop the hard core of information theory as an essentially deductive mathematical system.

About half the book is devoted to the telecommunications applications of the theory: definitions, coding, channel capacity, errors, redundancy, language, reading, and writing. The remainder develops the entropy (or "negentropy") principle of information, which is formulated in thermodynamic terms as a generalized Carnot principle. All sections abound with worked-out problems and numerical examples. Many practical results of the latter section often do not seem to justify the effort to derive them since they are either physically insignificant or are available to ordinary calculation. However, Brillouin properly reminds the reader that most of the real value of the new theory lies as yet undiscovered, and the informational discussions of such things as measurements, errors, statistical mechanics, and noise theory serve (a) to further understanding of classical problems, (b) to establish consistency in the existing physical theory, and (c) to verify for the reader the new findings of information theory. Brief but interesting mention is also made of the directions which nonobjective information theories might take. Because of the relative infancy of the subject and the book's accent on a physical rather than mathematical approach, *Science and Information Theory* is not a definitive treatise. However, it is likely to remain for some time as the outstanding primer on the subject for the interested engineer-physicist.

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