random variate z belonging to the chi-square distribution with one degree of freedom. These numbers were formed as $z = g^2$, where g is a Gaussian variate formed by the Box-Muller method from a uniform variate. The numbers x and z can be used to simulate a variate chi-square with any positive-integer degree of freedom. The tables are subjected to various tests of randomness, and an example is given of their use in a Monte Carlo application.

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20[K, P].—HERBERT FREEMAN, *Discrete-Time Systems: An Introduction to the Theory*, John Wiley & Sons, Inc., New York, 1965, xiii + 241 pp., 24 cm. Price $10.00.

This handsomely-made book attempts to fill an important role in the analysis of discrete-time systems, particularly of systems that contain digital computers. The book is well written, in the sense that the prose is lucid, but it suffers from a lack of organization and unity that reduce it from a self-contained text to a useful reference for a number of somewhat disjointed topics.

The major fault of the book is the absence of an attempt to inform the reader of the reasons for the choice and order of topics. As a result, the underlying unity of the subject matter is never brought out. The material is not elegant enough to form a satisfying mathematical treatise, so the choice of topics has to be based on utility in engineering applications. Unfortunately, the use of this material is brought in only on an ad hoc basis, rather than as an integral part of the fabric of the text.

The preface of the book is excellent, eloquently discussing the requirement for a good treatment of the subject. The introductory chapter is quite good in introducing the basic concepts of the field and in relating the models studied to the actual phenomena that they try to describe. Some of the definitions themselves depend on undefined terms, but this is a minor failing, since the meaning is usually clear, and since the following treatment is descriptive rather than deductive. The chapters that present analytical tools (Chapters 2–5) contain much material that will be useful to the working engineer who knows what his problem is and needs a method of solution. For the reasons given above, these chapters do not of themselves form the basis for a satisfying text. Chapters 6 and 7, on continuous-time systems with discrete-time inputs, and on sampled-data control systems, respectively, are interesting surveys of applications of the preceding theory, but they suffer somewhat from the attempt to handle difficult problems (especially stability theory) on an elementary level.

The final chapter, on discrete stochastic processes, is especially unsatisfactory, since the mathematical level sufficient for most of the rest of the book is wholly insufficient even to transmit an appreciation of the nature of the stochastic problems, let alone of their solutions. (In fact, the book suffers throughout from the absence of an early treatment of noise in this type of system.)

In sum, for the reader who has entered this field without the proper mathematical background, but who understands what problems exist, this will be a readable and useful reference. The individual paragraphs are well-written and reasonably accurate. For the reader from an allied technical or scientific discipline who is interested in the activity of his colleagues working on discrete-time systems, and for the graduate student who is first being introduced to discrete-time systems, the book will be something of a disappointment in its attempts to fulfill the need recognized in the preface.

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21[K, P].—Thornton C. Fry, *Probability and Its Engineering Uses*, Second Edition, D. Van Nostrand Company, Inc., Princeton, New Jersey, 1965, xv + 462 pp., 24 cm. Price $12.00.

Thirty-seven years have elapsed since the famous first edition appeared. Such an exceptional delay is fitting, however, since the book has often been called a classic, and one should not tamper (too much) with classics. Nonetheless, considerable changes have now been made. Three chapters have been added: Chapter II, *The Language of Probability*; Chapter X, *Matrix Methods and Markov Processes*; and Chapter XI, *The Foundations of Statistics*; and two chapters have been deleted: the old Chapter IX, *Curve Fitting*; and the old Chapter XI, *Fluctuation Phenomena in Physics*. The book is now slightly shorter than before. No explanation is given for the deletions, and the reviewer wishes that the theory of fluctuation phenomena had been kept; the physical phenomena there are of interest, and the theory may even be applicable to some number-theoretic situations (cf. *MTAC*, v. 13, 1959, p. 279).

The remaining nine chapters (those with their previous names) have been thoroughly rewritten, even to the extent of including minor stylistic changes here and there. There are nine tables in the Appendix (factorials, binomial coefficients, normal error and Poisson functions, etc.). Of these, the table of Student's Test of Significance is new, while three other short tables have been deleted.

A publisher's blurb on the jacket neatly characterizes the book as follows:

> "The point of view of the first edition has been retained in the revision. Thus, it is less pragmatic and more postulational than was fashionable in 1928, but less abstract and more attuned to the realities of the physical world than is usual today."

The new edition will therefore be read eagerly by those who continue to have some interest in the real world.

D. S.

22[K, P].—Leonard Kleinrock, *Communication Nets: Stochastic Message Flow and Delay*, McGraw-Hill Book Company, New York, 1964, ix + 209 pp., 24 cm. Price $12.50.

Elementary queueing theory and linear programming form the basis for the author's paradigm of communication nets presented in this much revised doctoral thesis on electrical engineering carried out at MIT. Mathematical prerequisites