roots θ_i for multivariate populations of from $s = 1$ to 50 variates, the roots having a distribution

$$k \prod_{i=1}^{s} \theta_i^{Q/2} (1 - \theta_i)^{R/2} \prod_{i>j} (\theta_i - \theta_j) \prod_{i=1}^{s} d\theta_i .$$

The tables have been calculated by use of the first four moments of the distribution. A further set of tables gives the beta parameters for a beta-distribution approximation. Explanations and illustrations of the use of the tables are included.

ALAN T. JAMES

Yale University
New Haven, Connecticut

43[K].—R. LOWELL WINE, *Statistics for Scientists and Engineers*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1964, xvi + 671 pp., 24 cm. Price $12.00.

This book is designed as a beginning one-year textbook in modern statistics, with elementary calculus as a prerequisite. Topics covered include frequency distributions, probability, sampling and sampling distributions, sampling from normal populations, analysis of variance, factorial experiments, regression, analysis of counted data, and distribution-free methods. The book contains ten tables: ordinates of the normal density function, cumulative normal distribution, confidence belts for proportions, percentage points of the χ^2 distribution, percentage points of the χ^2/ν distribution, percentage points of the t distribution, percentage points of the F distribution, power of the analysis of variance F test, percentage points of the Studentized range, and confidence belts for the correlation coefficient ρ.

The book is presented as one that may be used as a text for either a theoretical or applied course in statistics. It is the reviewer's opinion that such an approach is not satisfactory for a textbook, which should be one or the other, but not both. Although the book is fairly well written, it reads at times like a lecture rather than a text on which to base a lecture. The book contains many examples and problems, a good feature. It also seems to be reasonably free of misprints. The book should be useful to anyone learning the problems of numerical analysis in experimentation or planned investigations.

S. KULLBACK

Statistics Department
The George Washington University
Washington, D. C.

44[K, P, Z].—LEON LEVINE, *Methods for Solving Engineering Problems Using Analog Computers*, McGraw-Hill Book Co., Inc., New York, 1964, xiii + 485 pp., 23 cm. Price $14.50.

This book describes how an engineer or a scientist may use the analog computer as a tool in solving engineering problems. It contains very little information in electronic circuitry and computing components, but it presents the necessary mathematical background and problem-solving techniques. The book consists of eleven chapters, in addition to thirteen appendices. The contents of the first six chapters are relatively well known, but the last five chapters present material which is rather unusual.

The first chapter discusses some general concepts of analog computation. Chapter 2 briefly reviews the theory of ordinary differential equations. It brings out those properties which are important to computer users. Chapter 3, Programming of Differential Equations, describes how one draws a computer diagram (i.e., set-up diagram using block symbols of operational amplifier, potentiometer, multiplier, etc.) from the given differential equations, with emphasis on initial conditions, normalized equations, and adjoint equations. Chapter 4 describes the techniques of block diagram manipulation and of scaling, and shows how operational amplifiers are used in problem solving. Chapters 5 and 6 examine the problems of explicit and implicit function generations, respectively.

Chapter 7, Error-Reduction Techniques, treats several cases where the effects of component errors can be reduced. Chapter 8, Optimization Techniques: Gradient Methods for Finding Maxima and Minima, describes how the computer may be used to optimize solutions. It mainly presents a mathematical and heuristical approach of gradient optimization procedures, and will be of interest to control engineers and systems designers.

The last three chapters, together with most of the appendices, provide an extensive discussion of statistics and of computer implementation of statistical problems. Chapter 9, Estimation and Test of Hypotheses, discusses fundamental statistical concepts and shows how one may use statistical properties to solve engineering problems. Chapter 10, Experimental Design and Detection of Errors, considers how many data are necessary to meet the accuracy requirements of a statistical problem, and discusses techniques useful in detecting computer malfunctions. (These two chapters were contributed by Arnold Levine.) Chapter 11, Application of Statistics to Computer Operations, treats methods for simulating statistical problems on the computer.

Although this book does not discuss methods of solving problems, using finite-difference networks and using continuous field analogs, it does uniquely present methods of solving problems involving noise processes rather extensively, as well as some techniques on error-reduction and optimization. It is quite readable and well written. It should serve as an excellent text for a course on solving engineering problems by analog methods.

YAOHAN CHU

University of Maryland
College Park, Maryland

45[K, X].—J. M. HAMMERSLEY & D. C. HANDSCOMB, *Monte Carlo Methods*, John Wiley & Sons, Inc., New York; Methuen & Co., Ltd., London, 1964, vii + 178 pp., 19 cm. Price $4.75.

This book is an exceptionally clear and stimulating survey of applications of the Monte Carlo method. It is not a text; very few derivations are given. It is a guide to what has been done with the Monte Carlo method, to how the method should be applied, and to what should be done with this method in future research and applications.

The Monte Carlo method associates with a given problem a statistical problem to which the answer provides an answer to the original problem. The associated