The first two chapters provide a short introduction to numerical analysis, computing and matrix algebra up to, but not including, the Jordan canonical form.

The next six chapters, which comprise the bulk of the book, deal with the linear equation and inverse problems. The usual elimination methods associated with the names of Gauss, Gauss-Jordan, Crout, Cholesky, and Aitken are described in detail, along with methods based on orthogonalization.

There is a comparison of methods and a good elementary introduction to error analysis, which includes such topics as conditioning, rounding error, correction procedures, and effects of perturbations. The section on linear equations ends with a short chapter on iterative methods, including those of Jacobi and Gauss-Seidel.

The last three chapters, about a fourth of the book, are devoted to the eigenvalue problem. The power and inverse power methods as well as the methods of Jacobi, Givens, Householder, and Lanczos are discussed in some detail, and the LR and QR transformations are introduced. There is also a short treatment of error analysis.

At the end of each chapter is an annotated bibliography, which supplements the text with notes on more advanced topics.

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41[G, X].—R. Zurmühl, *Matrizen und ihre technischen Anwendungen*, Springer-Verlag, Berlin, 1964, xii + 452 pp., 23 cm. Price DM 36.

This is the fourth edition. The first appeared in 1950, and was given a justifiably enthusiastic review in *MTAC* in 1951 by Olga Taussky. At that time it gave by far the best existing account of numerical methods for inverting matrices and finding proper values and vectors.

Of the 446 pages of text in the present edition, most of the "technical applications" are to be found in the final chapter of 90 pages. The major emphasis is upon theory and upon numerical methods. The theory is well and concisely presented, and successive editions have included the latest in techniques. Innovations appearing in the present edition but not to be found in the third (1960) are Rutishauser's LR transformation and some discussion of vector and matrix norms. Also there is introduced the "Hadamard condition number" of a matrix, which is the ratio of the modulus of the determinant of the matrix to the product of the Euclidean norms of the rows. ALGOL algorithms are introduced in a few places.

The general organization, and the style, remain about the same. There are a number of numerical examples worked out for illustration. The exposition is uniformly good, and very little is presupposed in the way of background. The book should be very useful either as a text or for reference.

A. S. H.

42[K].—Tito A. Mijares, *Percentage Points of the Sum $V_1^{(s)}$ of s Roots (s = 1–50), A Unified Table for Tests of Significance in Various Univariate and Multivariate Hypotheses*, The Statistical Center, University of the Philippines, Manila, 1964, vii + 241 pp., 27 cm. Price $8.00.

Tables are given for percentage points of the distribution of the sum of the 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.

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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.

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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.