curacy there can be a reference to section 12.3.4, which, if the length of this volume is any indication, must be fully 3000 pages away.

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19[3].—JOAN R. WESTLAKE, *A Handbook of Numerical Matrix Inversion and Solution of Linear Equations,* John Wiley & Sons, Inc., New York, 1968, viii + 171 pp., 23 cm. Price $10.95.

This is, as the title indicates, a handbook. A two-page introduction is followed by brief descriptions of the standard direct and iterative methods for a total of 85 pages, with no theory and (at this stage) no evaluation. This is followed by chapters on measures of condition (four pages), measures of error (five pages), scaling (two pages), operational counts (four pages), comments and comparisons (14 pages), including some test results. In the appendix are a glossary (nine pages), a collection of basic theorems (ten pages), and a set of test matrices, and finally a list of references (126 items), a table of symbols, and an index. No programs are given. Each method is briefly but clearly described and the selection is quite reasonable. It should be a useful and convenient reference for the purpose intended.

A. S. H.

20[3].—ANDRÉ KORGANOFF & MONICA PAVEL-PARVU, *Éléments de la Théorie des Matrices Carrées et Rectangles en Analyse Numérique,* Dunod, Paris, 1967, xx + 441 pp., 25 cm. Price 98 F.

This is the second volume in a series entitled "Méthodes de calcul numérique," of which the first, *Algèbre non linéaire,* appeared in 1961 as a collection of papers on the subject, edited by the senior author of this volume. The first volume provides a fairly elementary but rigorous development of methods available at that time for solving nonlinear equations and systems of equations, the most sophisticated chapter being the first on error analysis.

The present volume, by contrast, treats only a limited aspect of the subject, but treats it in considerable depth and at a rather high level of sophistication. Primarily it is concerned with the Moore-Penrose generalized inverse, a subject which, along with still more general "generalized inverses," has recently led to a rapidly expanding literature. Presumably the eigenvalue problem will be the subject of a later volume.

The book is divided into three "parts." Of the three chapters in this part, the first provides a survey of certain notions from functional analysis, and the remaining two continue in a similar vein with the theory of norms as the guiding principle, these having been introduced already in the first chapter.

In Part 2, the first chapter starts out quite generally to discuss, for a given matrix a, the most general solutions of the equations $e_g\, a = a$ and $a\, e_d = a$, thence the most general solutions of $a_g'\, a = e_d$, and $a\, a_d' = e_g$, and proceeds to impose