As a text for presenting an abstract development the book should do very well. As a reference book for the numerical analyst who needs to look up something about matrix theory there are more accessible sources.

Not many misprints were noted, but on p. 123 "the contraction of M" appears as "the contradiction of M."

A. S. H.

59[G, H, X].—PAUL A. WHITE, *Linear Algebra*, Dickenson Publishing Co., Inc., Belmont, Calif., 1966, x + 323 pp., 24 cm. Price $8.50 (Text List), $11.35 (Trade List).

This is a carefully written, introductory text. It contains all of the material essential to such a text. The subject is introduced concretely, using ordered n-tuples, after which geometry is done within this context. Abstract, finite-dimensional, vector spaces are then developed, followed by matrices and linear transformations. Attention is paid to congruence and similarity invariants (Jordan forms, minimal polynomials, etc.). The geometric content of the subject is emphasized throughout. The logical structure is clear, since the definition-theorem-proof approach is used. Finally there are many worked-out examples, as well as a varied selection of exercises.

One apparent bonus at this level, is the introduction of the exterior product $\mathbf{u}_1 \wedge \cdots \wedge \mathbf{u}_k$, for $\mathbf{u}_i \in V$, an n-dimensional space. Unfortunately, in this reviewer's opinion, this noble attempt fails. First, the definition is very much dependent on coordinates, hence highly computational and unmotivated. Next, the definition is not standard, nor even unique, since if $\mathbf{e}_1, \cdots, \mathbf{e}_n$ is the usual basis in coordinate space, $\mathbf{e}_{i_1} \wedge \cdots \wedge \mathbf{e}_{i_k} \wedge (i_1 < \cdots < i_k)$ is defined only up to a multiplicative constant $c_{i_1 \cdots i_k}$, which leads to complications when the author speaks of "the" exterior product. Furthermore, the author (uncharacteristically) neglects to state $c_{i_1 \cdots i_k} \neq 0$ —clearly required if the usual results on linear dependence are to hold.

According to the author, the book follows the CUPM recommendations for a linear algebra course. The material has been used in NSF Institutes and in regular undergraduate classes, and despite the above objection, it is easy to believe that it proved highly successful.

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60[K].—M. J. ALEXANDER & C. A. VOK, *Tables of the Cumulative Distribution of Sample Multiple Coherence*, Research Report RR 63–37, Rocketdyne Division of North American Aviation, Inc., Canoga Park, Calif., November 1963, nine volumes totalling 5440 pp., 32 cm. Price $50.00 (not postpaid).

The multiple coherence parameter plays a role in spectral analysis of multidimensional time series analogous to that of the squared multiple correlation coefficient in multivariate analysis. In fact, these tables can be used for the latter under the conditions described below.

If n, p, R^2, and x represent, respectively, the number of degrees of freedom, the number of records, the true coherence, and the square of the sample coherence, then under appropriate conditions [1], the sample multiple coherence is approximately distributed with probability density function

$$C(x|n, p, R^2) = \frac{\Gamma(n)}{\Gamma(p-1)\Gamma[n-(p-1)]}(1-R^2)^n x^{p-2} \times (1-x)^{n-p} F(n, n, p-1; R^2 x)$$

where $F(n, n, p - 1; R^2x)$ is the hypergeometric series

$$\sum_{k=0}^{\infty} \frac{\Gamma^2(n+k)\Gamma(p-1)}{\Gamma^2(n)\Gamma(p-1+k)} \frac{(R^2x)^k}{k!}.$$

The tables presented in these nine volumes give 5D values of the cumulative distribution function $\int_0^x C(u|n, p, R^2)du$ for $p = 2(1)10$, $n = p(1)25$; $R^2 = 0(0.01)0.69$, $x = 0(0.01)1$, and $R^2 = 0.70(0.01)1$, $x = 0(0.01)0.66(0.005)1$. Each volume contains the tabular entries for a specific value of p, with the values of n arranged in ascending order.

The tables are in agreement with Pearson's tables of the incomplete beta function [2], which correspond to $R^2 = 0$, and with the Amos-Koopmans tables [3], which give the cumulative distribution of sample multiple coherence for $p = 2$. The tables were also checked internally. It is believed that the tabular errors do not exceed a unit in the final decimal place.

The tables can also be used for the distribution of the square of the multiple correlation coefficient [4]. Thus, if p', n', R^2, and x represent, respectively, the number of variables, the number of degrees of freedom, the true square of the multiple correlation coefficient, and the square of the sample multiple correlation coefficient, then the tables include entries for $p' = 3(2)19$, $n' = p + 1(2)50$, with the same ranges for R^2 and x as before.

AUTHORS' SUMMARY

1. N. R. GOODMAN, "Statistical analysis based on a certain multivariate complex Gaussian distribution (an introduction)," *Ann. Math. Statist.*, v. 34, 1963, pp. 152–177.
2. KARL PEARSON, *Tables of the Incomplete Beta-Function*, Cambridge Univ. Press, Cambridge, 1956.
3. D. E. AMOS & L. H. KOOPMANS, *Tables of the Distribution of the Coefficient Coherence for Stationary Bivariate Gaussian Processes*, Sandia Corporation Monograph SCR-483, March 1963.
4. R. A. FISHER, *Contributions to Mathematical Statistics*, Wiley, New York, 1950.

61[K, P, W, X].—W. GRANT IRESON, Editor, *Reliability Handbook*, McGraw-Hill Book Co., New York, 1966, 720 pp., 24 cm. Price $22.50.

This closely packed 720-page volume contains such a wealth of practical and useful information that it is difficult for a reviewer to write an analytical description. No other work in the reliability area comes to mind with the broad scope, the depth of detail, and the clarity of exposition of this *Handbook*. The editor and authors can justifiably take pride in the fruit of their labors.

To say that the first five sections, for example, are concerned with background mathematical and statistical concepts and tools, does not give the flavor of the content. The section on system effectiveness provides a basis for the quantitative evaluation of a system. This section, as is true of most of the others, has an aura of