variables, leading to an analysis of vector sums of squares. A multivariate analogue of the variance σ^2 of a univariate distribution is the determinant of the covariance matrix Σ, called the "generalized variance" [1].

The generalized variance ratio or U-statistic, here tabulated, is the ratio of the likelihood estimate of the generalized residual variance assuming that the hypothesis is false to the likelihood estimate assuming that the hypothesis is true. The parameters for the U-statistic are the dimension p of the covariance matrix Σ and the degrees of freedom, q and n, for the hypothesis and error, respectively.

These unpublished tables, computed on an IBM 360 Model 40 system, consist of 6D values of $U(p, q, n)$ for $p = 1(1)8$, $q = 1(1)15(3)30(10)40(20)120$, $n = 1(1)30(10)40(20)140(30)200$, 240, 320, 440, 600, 800 1000, at confidence levels $\alpha = 0.05$ and $\alpha = 0.01$, respectively.

As a partial check, recent 3D tables of Schatzoff [2] have been used by the author to recompute the U-statistic for $p = 4(2)10$, $q = 4$; $p = 5(7)9$, $q = 6$; $p = 3, 7$, $q = 8, 10$. These results were found to agree to at least 3D with the corresponding data in the more extended tables under review, which are the most elaborate of this type thus far calculated.

<div align="right">J. W. W.</div>

1. T. W. ANDERSON, *An Introduction to Multivariate Statistical Analysis*, John Wiley & Sons, New York, 1958.
2. MARTIN SCHATZOFF, "Exact distributions of Wilks's likelihood ratio criterion," *Biometrika*, v. 53, 1966, pp. 347–358.

57[12].—J. M. FOSTER, *List Processing*, American Elsevier Publishing Co., Inc., New York, 1967, 54 pp., 23 cm. Price $4.50.

This is an excellent little book. It introduces the concepts of list-processing within a programming language which is an extension of ALGOL. This has the advantage that many of the techniques which are used in languages like LISP or IPL-V can be illustrated rather simply, and in a way which makes them easily accessible to the programmer who only knows ALGOL, or even FORTRAN. It has the slight disadvantage that the more innovative features of list-processing languages are lost, such as the lack of distinction between program and data in LISP, or the form of the replacement rule in SNOBOL.

The description of list-processing facilities is based mainly on LISP, both from the point-of-view of the user and of the implementer. Other established list-processing languages are also discussed.

The book reads very easily, but is by no means superficial, and would be very useful in an introductory course on programming or machine intelligence.

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58[12].—JAMES T. GOLDEN & RICHARD M. LEICHUS, *IBM* 360 *Programming and Computing*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1967, ix + 342 pp., 26 cm. Price $5.50.

This recent entry to the steadily increasing ranks of IBM 360 programming texts

is probably the most detailed and complete to date. Its twelve chapters deal with decimal and binary programming, indexing, logical bit and byte manipulations, floating-point operations, macros, subroutines and linkages, 360 I/O operations, I/O software, operating systems in general, and the 360 Disk Operating System in particular.

Although intended as an introductory text to programming and operating systems, with reference to the IBM 360, this book turns out to be much too sophisticated to be termed "Introductory" and much too involved with the inner workings of the 360 to be considered general (e.g., hexadecimal).

However, the authors have treated their subject remarkably well, leaving very little to be desired. The text is adequately prepared with flow charts, diagrams, and programming examples. Most examples are discussed in great detail and are easy to follow. The result is an excellent book in 360 machine language programming for both reference and self-instruction. While seasoned programmers might find the book well suited to their tastes, the inexperienced novice could have a fairly rough time with the material. But that might be a problem more inherent in the machine involved than in the book itself.

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59[13].—LESLIE C. EDIE, ROBERT HERMAN & RICHARD ROTHERY, Editors, *Vehicular Traffic Science*, American Elsevier Publishing Co., Inc., New York, 1967, x + 373 pp., 24 cm. Price $16.00.

We quote from the preface:

This volume contains the Proceedings of The Third International Symposium on the Theory of Traffic Flow held under the auspices of the Transportation Science Section of the Operations Research Society of America.

The Symposium was held in New York City during June, 1965. Forty-five technical papers were presented, all of which are published in these Proceedings in full or in the form of summaries. They cover a variety of traffic phenomena relating to single-lane, two-lane, and multi-lane traffic flow; general theory and experiment; networks and intersections; pedestrian and vehicle gap acceptances; simulation; and economics and scheduling. The program of this meeting reflected a continuation and expansion of the fields of research which were covered in the first two symposia as well as the development of new ideas. The aim of the work is to develop an understanding of vehicular traffic which will contribute to the solution of the pressing problems of traffic congestion, delays, and accidents with their rising economic costs to society as a whole, and their rising personal costs to individual members of society in terms of human frustration and suffering.

E. I.

60[13.05].—M. CHRETIEN & S. DESER, Editors, *Axiomatic Field Theory, Vol.* I, Brandeis University Summer Institute in Theoretical Physics, 1965, Gordon & Breach, Science Publishers, Inc., New York, 1966, xi + 516 pp., 24 cm. Price $32.50.