This book is intended to provide material for a one-semester course at the sophomore or junior level. There are sixteen sections grouped into three chapters: the first chapter develops the elementary notions including inversion; the second deals with rank and with determinants; the third, on characteristic roots, gives the Schur triangularization theorem, which is used as a basis for a brief discussion of normal matrices, and concludes with a section on inequalities, including Gershgorin circles, ovals of Cassini, and the minimax theorems for Hermitian matrices. The normal forms of Jordan and of Frobenius are not included. There are a large number of exercises, with 47 pages of answers and solutions at the end.

The development is rigorous, and a number of auxiliary notions, such as rings and fields, permutation groups, and the like, are introduced, but subordinated to the main objective. The book should be quite teachable, and even suitable for independent reading by the novice.

A. S. H.

53[G].—Jean-Marie Souriau, *Calcul Linéaire*, Second edition (in two volumes), Presses Universitaires de France, Paris, 1964 and 1965, Volume I, xv + 259 pp., 19 cm. Price 27 f; Volume II, xv + 263 pp., 19 cm. Price 30 f.

The first volume bears the subtitle "Méthodes mathématiques de la physique," and in the preface it is stated that this is a work of pure mathematics, intended for all those who have to apply linear algebra.

The development is rigorous and abstract, but accompanied throughout by figures and illustrative material, and by numerous exercises. Solutions for the exercises are given at the end of Volume II. Inevitably the notations and special terminology become rather involved, but an unusually detailed index, together with a list of symbols, are of great assistance.

The first volume gives the general theory. An initial chapter of about forty pages develops the notion of sets, operators, inversion groups, and the like; linear spaces and linear operators come in chapter two of not quite fifty pages. Next come matrices, then dimensionality, then a chapter of about seventy pages on multilinear algebra with determinants, and finally a chapter on spectral properties of about thirty pages, that stops short of the Jordan normal form.

The second volume is given over to applications, beginning with the exponential and logarithm, but then going on to special spaces. Something over a hundred pages are devoted to "Euclidean and hermitian spaces": normal, hermitian, and anti-hermitian operators; orthogonality, unitary groups, the Lorentz group, to pick a few topics more or less at random. Finally there is a brief chapter on spaces of dimension 2, 3, and 4, and on spinors of Dirac.

There is very little direct reference to methods of computing. But the author is able to include quite a large amount of theory, and in general he succeeds very well in making intuitive his abstract approach.

A. S. H.

54[K, L, M].—T. Krishnan, *Table of Truncated Probits*, Indian Statistical Institute, Calcutta, 4 + 28 computer sheets, ms. deposited in UMT File.

This unpublished table is an elaboration of one appearing in a paper [1] by the author, wherein the underlying theory and some applications are presented in detail.

The *truncated probit* is the value of X (customarily increased by 5 to avoid negative values) that satisfies the equation

$$P + (1 - P)\varphi(K) = \varphi(X)$$

where P and K represent, respectively a specified probability and a given "standardized lower point of truncation" (the latter also augmented by 5 in the present tables). Here $\varphi(X)$ represents the integral

$$(2\pi)^{-1/2} \int_{-\infty}^{X} \exp\,(-u^2/2)\; du.$$

Values of the truncated probits are tabulated herein to 4D for $P = 0.01(0.01)0.99$, $K + 5 = 0.4(0.1)7.3$.

In private correspondence the author revealed that the table was prepared on an IBM 1401 system.

An introductory note sets forth the approximations published by Hastings [2] that were used here in the numerical evaluation of the error integral and its inverse, as required in the preparation of this unique and useful table.

J. W. W.

1. T. Krishnan, "Truncation in quantal assay," *Ann. Inst. Statist. Math.*, v. 17, 1965, pp. 211–223.
2. C. Hastings, J. T. Hayward & J. P. Wong, *Approximations for Digital Computers*, Princeton Univ. Press, Princeton, N. J., 1955.

55[L].—R. Frisch-Fay, *Tables of Integrals of Fractional Order Bessel Functions*, UNICIV Report No. R-9, University of New South Wales, Kensington, N.S.W., Australia, June 1965, 13 pp., 23 cm. Copy deposited in UMT file.

In his introduction to these tables the author notes the lack of such tabulations except for those of the Fresnel integrals. With reference to integrals of Bessel functions of the first kind of positive integer order, he cites the unique tables of Knudsen [1].

The present tables give numerical values of $\int_0^z J_\nu(t)\, dt$ for $\pm\nu = \frac{1}{6}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{2}{3}, \frac{3}{4}$, and $\frac{5}{6}$ to 7D for $z = 0(0.1)6.3$ and to 5D for $z = 6.3(0.1)10$.

Standard power-series expansions formed the basis for the underlying calculations, which were performed on the UTECOM computer at the University of New South Wales.

References to previous ta bles of integrals of Bessel functions appear in a recent treatise by the reviewer [2].

Y. L. L.

1. H. L. Knudsen, *Bidrag Til Teorien For Antennesystemer Med Hel Eller Delvis Rotationssymmetri*, I Kommission Hos Teknisk Forlag, Copenhagen, 1953. [See *MTAC*, v. 7, 1953, pp. 244–245, RMT **1140**.]
2. Y. L. Luke, *Integrals of Bessel Functions*, McGraw-Hill Book Company, New York, 1962, pp. 70–72. [See *Math. Comp.*, v. 17, 1963, pp. 318–320, RMT **51**.]