tions; nonlinear optimization, nonlinear programming and systems of inequalities, nonlinear ordinary differential equations; introduction to automatic control; and linear and nonlinear prediction theory.

Of these chapters, only that on nonlinear optimization may be considered to be well enough organized and to contain enough material to represent a contribution to mathematical literature. The others show lack of understanding of the basic ideas and methods, lack of organization, or both. This is particularly true of the chapters on control theory and nonlinear differential equations.

The book is definitely not recommended for either students or teachers.

RICHARD BELLMAN

The RAND Corporation
Santa Monica, California

92[K, O, X, Z].—JOHN PEMBERTON, *How to Find Out in Mathematics* (*A Guide to Sources of Mathematical Information Arranged According to the Dewey Decimal Classification*), Macmillan, New York, 1963, x + 158 p., 19 cm. Price $2.45 (paperbound).

This is a useful guide, not to the substance of mathematics, but more to its organizational set-up. It is written from the point of view of the librarian. The list of titles of the twelve chapters and three appendices that follows should indicate its scope:

Careers for Mathematicians; The Organization of Mathematical Information; Mathematical Dictionaries, Encyclopedias and Theses; Mathematical Periodicals and Abstracts; Mathematical Societies; Mathematical Education; Computers and Mathematical Tables; Mathematical History and Biography; Mathematical Books—Part 1: Bibliographies; Mathematical Books—Part 2: Evaluation and Acquisition; Probability and Statistics; Operational Research and Related Techniques; Sources of Russian Mathematical Information; Mathematics and the Government; Actuarial Science.

D. S.

93[I, M].—V. M. BELI͡AKOV, R. I. KRAVT͡SOVA & M. G. RAPPAPORT, *Tabli͡tsy elliptiche͡skikh integralov*, Tom I (*Tables of Elliptic Integrals*, v. I), Izdatel′stvo Akademie Nauk SSSR, Moscow, 1962, 656 p., 27 cm. Price 5 rubles 14 kopecks.

This is the third set of extensive tables of the elliptic integral of the third kind to appear within the last five years. The previous ones were prepared, respectively, by Selfridge and Maxfield [1] and by Paxton and Rollin [2].

In the present member of a two-volume set we find in Table I the values of

$$\Pi(n, k^2, \varphi) = \int_0^\varphi (1 + n \sin^2 \alpha)^{-1}(1 - k^2 \sin^2 \alpha)^{-1/2}\, d\alpha$$

to 7S for $-n = 0(0.05)0.85, 0.88(0.02)(0.94)(0.01)0.98(0.005)1$, $k^2 = 0(0.01)1$, and $\varphi = 0°(1°)90°$. Corresponding to $n = 0$, $\Pi(n, k^2, \varphi)$ reduces, of course, to $F(k^2, \varphi)$.

Table II gives $E(k^2, \varphi)$ to similar precision for the same range in k^2 and φ.

Approximations to 8D of $A_m(\varphi) = \int_0^\varphi \sin^{2m} \alpha\, d\alpha$ appear in Table III for $m = 1(1)10$

and $\varphi = 0°(10')90°$. These data were used in calculating the main table when $k^2 \leqq 0.7$ and $|n| \geqq 0.1$, by expanding the integral in powers of k^2, with coefficients involving $A_m(\varphi)$. When $k^2 \geqq 0.7$, the integral was expanded in powers of k'^2, and the coefficients depend on $R_m(\varphi) = \int_0^\varphi \tan^{2m} \alpha \sec \alpha \, d\alpha$, which is given in Table IV to 8D for $m = 1(1)8$, $\varphi = 0°(10')45°50'$.

Table V gives

$$R_0(\varphi) = \ln \tan\left(\frac{\varphi}{2} + \frac{\pi}{4}\right),$$

which is the inverse gudermannian (the equivalent of $\Pi(0, 1, \varphi)$ in the present notation), to 9D for $\varphi = 0°(1')5°43'$, and to 8S for $\varphi = 5°44'(1')89°59'$.

This volume closes with Table VI, listing $K(k^2)$ and $E(k^2)$ to 8S and $q(k^2)$ to 8D, for $k^2 = 0(0.001)1$.

The introductory text consists of four pages of definitions and explanatory remarks.

This reviewer has noted hand-corrections of typographical errors on a total of 21 pages in the copy he examined.

A spot check against corresponding entries in the Paxton-Rollin tables revealed discrepancies of at most a unit in the last decimal place. Direct comparison with the tables of Selfridge and Maxfield is not practicable because of the different subtabulation of k^2.

J. W. W.

1. R. G. Selfridge & J. E. Maxfield, *A Table of the Incomplete Elliptic Integral of the Third Kind*, Dover Publications, Inc., New York, 1959. (See *Math. Comp.*, v. 14, 1960, p. 302–304, RMT **65**.)

2. F. A. Paxton & J. E. Rollin, *Tables of the Incomplete Elliptic Integrals of the First and Third Kind*, Curtiss-Wright Corporation, Research Division, Quehanna, Pennsylvania, June 1959. (See *Math. Comp.*, v. 14, 1960, p. 209–210, RMT **33**.)

94[L, M].—L. N. Osipova & S. A. Tumarkin, *Tablitsy dlya rascheta toroobraznykh obolochek* (*Tables for the Calculation of Toroidal Shells*), Akad. Nauk SSSR, Moscow, 1963, xxvi + 94 p., 26 cm. Price 81 kopecks.

This publication of the Computational Center of the Academy of Sciences of the USSR includes tables computed on the electronic computer STRELA. The main table (pages 2–83) relates to the function

$$u = \pm \left| \frac{3}{2} \int_0^\theta \sqrt{\frac{|\sin \theta|}{1 + \alpha \sin \theta}} \, d\theta \right|^{2/3},$$

where $0 \leqq \alpha \leqq 1$, $-90° \leqq \theta \leqq 90°$, and u has the same sign as θ. Values of u are given to 5D for $\alpha = 0$, $\theta = 0(1°)90°$; $\alpha = 0.05(0.05)0.95$, $\theta = -90°(1°)90°$; $\alpha = 1$, $\theta = -70°(1°)90°$. For convenience in applications, ten related quantities (including $\partial u/\partial\theta$) are also tabulated. In the range of α from 0.05 through 0.95, there are four pages for each value of α.

Appendix 1 (pages 86–88) lists to 5D without differences the real and imaginary parts of $e_0(is)$, $e_1(is)$ and of their s-derivatives $e_0'(is)$, $e_1'(is)$ for $s = 0(0.05)6$. Here

$$e_0(is) = \int_0^\infty \exp\left(-\frac{1}{3}x^3 - isx\right) dx, \qquad e_1(is) = \int_0^\infty x^2 \exp\left(-\frac{1}{3}x^3 - isx\right) dx.$$