manner time-variant linear systems, and there is an appendix on the operational calculus of Mikusiński. There are a great many exercises, with answers, and a conscientious student should be able to master the material even without the aid of a teacher. The printing is excellent.

F. D. MURNAGHAN

24[L].—WERNER E. KNOLLE & WILLIAM A. ALLEN, *Expansion of Elliptic Functions Tables*, 3 + 720 unnumbered sheets. Deposited in UMT File.

This large manuscript table of Jacobian elliptic functions constitutes an elaborate expansion of the first eight pages of the related Smithsonian tables [1]. The modular angle is now given over the range $\theta = 0(10'')2°$, in place of the original increment of 1°.

The format of the Smithsonian tables has been adopted for completeness, and the precision of 12D has been retained in the body of the tables.

In their explanatory text the authors state that each tabular value was computed independently on an IBM 7090 system. They claim that the existing computer program will suffice to produce results of comparable precision for values of the modular angle ranging up to 6°, and that further extension is possible through a slight modification of the program.

The original copy of these tables exists as an IBM listing on vellum paper, which can be reproduced inexpensively, according to the authors.

Comparison of the results of these new computations with the corresponding data in the Smithsonian tables revealed several serious errors in the latter; these are enumerated in the appropriate section of this issue.

J. W. W.

1. G. W. SPENCELEY & R. M. SPENCELEY, *Smithsonian Elliptic Functions Tables*, The Smithsonian Institution, Washington, D.C., 1947.

25[L, M].—A. V. H. MASKET & W. C. RODGERS, *Tables of Solid Angles:* I. *Solid Angle Subtended by a Circular Disc;* II. *Solid Angle Subtended by the Lateral Surface of a Right Circular Cylinder*, Office of Technical Services, Washington 25, D.C., July 1962, iii + 476 p., 26.5 cm. Price $5.00.

The two large tables comprising this publication contain, respectively, 125,000 and 112,500 values to 6 S (in floating-point form) of solid angles subtended by a circular disc and by the lateral surface of a right circular cylinder. The authors inform us that these tables are the result of a recalculation and enlargement, by use of a UNIVAC 1105 system, of *Tables of Solid Angles and Activations*, issued in November 1956 as a reproduction of Oak Ridge National Laboratory Report ORNL 2170.

All values in the tables are normalized to a unit radius of the disc or cylinder. The parameters are, then, the perpendicular distance z of the point above or below the plane of the disc, the distance ρ of the point from the axis of the disc or cylinder, and the height h of the cylinder. The solid angles in Table I are tabulated in steradians for $\rho = 0(0.05)6(0.25)16(0.5)35.5$ and $z = 0.02(0.02)5(0.04)10(0.2)20(0.4)100$; those in Table II, for $\rho = 1(0.05)6(0.25)16(0.5)35.5$ and $h = 0.02(0.02)5(0.04)10(0.2)20(0.4)100$.

A combination of Simpson's rule and four-point Gauss quadrature was used to obtain the data in Table I corresponding to the interval $0 \leqq \rho \leqq 0.95$; the remaining entries of Table I and all those in Table II were computed by 16-point Gauss quadrature. The authors state that the tabular data are accurate to within 1 or 2 units in the least significant place, except for those entries in Table I corresponding to $1 < \rho \leqq 35.5$, where the uncertainty ranges from 1 to 5 units in the last place.

Explanatory text consists of sections devoted to: computational procedures; solid angle contour integrals and related formulas, series, and approximations; illustrations of the use of these tables; and a list of 20 references supplementing those given in the Oak Ridge report.

J. W. W.

26[M, S].—V. VANAGAS, J. GLEMBOCKIJ, & K. UŠPALIS, *Tables of Radial Integrals of Atomic Spectra Theory*, Computing Centre, Academy of Science of the USSR, Moscow, 1960, xiii + 380 p., 26 cm.

The preface and the introduction to these extensive specialized tables are clearly written in Russian and English in parallel columns. Since it requires only seven pages of introductory text to describe the use of 380 pages of tables, the employment of two languages was only a minor burden on the editors, yet it opens the tables to a wide group of scientists. Other table-compilers should follow suit and also prepare bilingual introductory material.

The tables are designed to permit the numerical evaluation of the atomic radial integrals denoted by Slater [1] as $F^k(nl, n'l')$ and $G^k(nl, n'l')$ in cases where the individual electron radial integrals are approximated in the form:

$$R_{nl}(r) = \sum_i A_i r^{a_i} e^{-\alpha_i r}.$$

The functions actually tabulated are

$$V(ab; \gamma) = \log_{10}\left\{\int_0^\infty r^a e^{-\gamma r} \int_r^\infty r'^b e^{-r'} dr' dr\right\},$$

and

$$W(ab; \gamma) = \log_{10}\left\{\gamma^{b+1} \int_0^\infty r^a e^{-r} \int_r^\infty r'^b e^{-\gamma r'} dr' dr\right\},$$

from which the radial integrals in question can be calculated by methods described in the introduction. The functions V and W are tabulated for all nonnegative integer values of a and b in the range $0 \leqq a + b \leqq 16$, for $\gamma = 0.000(0.002)1.000$. The logarithms are given to six decimal places throughout.

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1. JOHN C. SLATER, *Quantum Theory of Atomic Structure*, McGraw-Hill, New York, 1960, v. 1, p. 311.

27[P, Z].—MITCHELL P. MARCUS, *Switching Circuits for Engineers*, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1962, ix + 296 p., 23.5 cm. Price $12.00.

As the title indicates, this is a book on switching circuits written for engineers. In particular, it is written for engineers with little or no background in the subject