3. K. A. KARPOV, *Tablicy funkcii* $w(z) = e^{-z^2} \int_0^z e^{x^2}\, dx$ *v kompleksnoĭ oblasti,* Insdat. Akad. Nauk SSSR, Moscow, 1954. See *MTAC*, v. 12, 1958, p. 304–305.

4. K. A. KARPOV, *Tablitsy funktsiĭ* $F(z) = \int_0^z e^{x^2}\, dx$ *v kompleksnoĭ oblasti,* Izdat. Akad. Nauk SSSR, Moscow, 1958. See *Math. Comp.*, v. 14, 1960, p. 84.

5. R. HENSMAN & D. P. JENKINS, "Tables of $(2/\pi)e^{z^2} \int_z^\infty e^{-t^2}$ for complex z," UMT file, *Math. Comp.*, v. 14, 1960, p. 83.

11 [L].—FRITZ OBERHETTINGER & T. P. HIGGENS, *Tables of Lebedev, Mehler, and Generalized Mehler Transforms*, Math. Note No. 246, Boeing Scientific Research Laboratories, Seattle, 1961, 48 p., 21.5 cm.

The transform pairs tabulated are:

A. (Lebedev)

$$g(y) = \int_0^\infty f(x) K_{ix}(y)\, dx,$$

$$f(x) = 2\pi^{-2} x \sinh \pi x \int_0^\infty y^{-1} K_{ix}(y) g(y)\, dy$$

where $K_\nu(x)$ is the modified Bessel function of the second kind.

B, C. (Mehler, Generalized Mehler)

$$g(y) = \int_0^\infty f(x) P^k_{ix-1/2}(y)\, dx$$

$$f(x) = \pi^{-1} x \sinh \pi x \Gamma(\tfrac{1}{2} - k + ix)\Gamma(\tfrac{1}{2} - k - ix) \int_1^\infty g(y) P^k_{ix-1/2}(y) dy,$$

where $P^k_{ix-1/2}(y)$ is the Legendre function. The Mehler transform is the case $k = 0$. Furthermore, $k = \frac{1}{2}$ and $k = -\frac{1}{2}$ give rise to Fourier cosine and sine transforms, respectively.

Most of the results given here are new. A list of Lebedev transforms is available in *Tables of Integral Transforms* by A. Erdélyi, W. Magnus, F. Oberhettinger, and F. G. Tricomi, McGraw-Hill, 1954, v. 2, Ch. 12, but the present compilation is much more extensive. Only a few entries of the Mehler transform are given in the above reference.

The transforms are useful to solve certain boundary-value problems of the wave or heat conduction equation involving wedge or conically shaped boundaries, and a number of references to physical problems are given in the bibliography. To facilitate use of the tables, definitions of higher transcendental functions which enter into the transforms are provided in a separate section.

Y. L. L.

12 [W].—F. P. FOWLER, JR., *Basic Mathematics for Administration*, John Wiley & Sons, Inc., New York, 1962, xvii + 339, 23.5 cm. Price $7.95.

This book presents a general survey of basic mathematics used in the development of modern decision-making techniques. The authors give a background sketch of a wide spectrum of topics: mathematical logic, theory of equations, matrix algebra, linear programming, differential calculus, integral calculus, probability, and mathematical models. In general, no rigorous proofs of theorems are given. Mathematical concepts are developed in an intuitive fashion, with some attention to the underlying assumptions made in the application of particular "optimization" procedures.

The chapter on probability contains an informative and readable exposition of the rudimentary principles, and provides the beginner with background material for the understanding and practical assessment of "management games" as a decision-making tool.

The overly simplified and sketchy treatment of linear programming was disappointing to this reviewer in view of the fact that the necessary mathematical tools for a more detailed discussion had been developed in the preceding chapters. The examples illustrated in the text deal with graphical solutions of integer linear programming problems, and the reader is given the impression that the Simplex method without modification may be used to solve general integer linear programming problems. A more serious shortcoming is the erroneous procedure described for converting a linear programming problem containing a system of inequalities to an equivalent one containing a system of equations. The example

$$\begin{aligned}
&\text{Maximize: } \pi = 800X_1 + 1200X_2 \\
&\text{Subject to: } \quad 20X_1 + 35X_2 \leqq 280 \\
&\qquad 6000X_1 + 5000X_2 \leqq 60000 \\
&\qquad 1000X_1 + 500X_2 \leqq 9000 \\
&\qquad 500X_1 + 500X_2 \leqq 6000 \\
&\qquad 4000X_2 \leqq 24000 \\
&\qquad X_1 \geqq 3 \\
&\qquad X_2 \geqq 2
\end{aligned}$$

is transformed to the following "equivalent" system by the introduction of "slack" variables X_3, X_4, X_5, X_6, X_7 and "artificial" variables X_8, X_9:

$$\text{Maximize: } \pi = 800X_1 + 1200X_2 + MX_3 + MX_4 + MX_5 + MX_6 + MX_7$$

Subject to:

$$\begin{aligned}
20X_1 + 35X_2 + X_3 &= 280 \\
6000X_1 + 5000X_2 + X_4 &= 60000 \\
1000X_1 + 500X_2 + X_5 &= 9000 \\
500X_1 + 500X_2 + X_6 &= 6000 \\
4000X_2 + X_7 &= 24000 \\
X_1 - X_8 &= 3 \\
X_2 - X_9 &= 2
\end{aligned}$$

where M represents a very large negative number. The coefficients of the "slack" variables in the transformed objective function should be zero; however, the authors claim that the "slack" variables represent imaginary units, and consequently a large negative number should be used to insure that the "slack" variables reduce to zero in the final solution. Furthermore, the author's definitions of "slack" and "artificial" variables are not in accordance with standard usage. The term "slack" variable is usually applied to a variable which is introduced to transform an inequality to an equation, while an "artificial" variable is usually applied to a variable which is introduced to provide a basis-variable in the process of obtaining an initial solution.

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13 [W].—E. S. VENTZEL, *Lectures on Game Theory*, Gordon and Breach, New York, 1961, 22 cm., 78 p. Price $4.50.

The 78 pages of this book cover an elementary exposition of game theory in eight chapters touching on the object of the theory of games, the minimax principle, pure and mixed strategies, elementary methods of solution, general methods of solution of finite games (for example, linear programming), approximate methods and methods of solving a few infinite games. The book may give a good idea of the subject to the non-mathematician, particularly since it concentrates on elementary applied illustrations of game theory.

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14 [W, Z].—MARTIN GREENBERGER, Editor, *Management and the Computer of the Future*, John Wiley & Sons, Inc., and The M.I.T. Press, New York, 1962, xxvi + 340 p., 21 cm. Price $6.00.

This volume contains the proceedings of a series of eight lectures on the subject, Management and The Computer of the Future, sponsored by the School of Industrial Management of the Massachusetts Institute of Technology during the spring of 1961 in celebration of MIT's centennial. At each session the main speaker presented a paper, which was followed by prepared remarks by two discussants. After additional brief remarks by the speaker the meeting was opened for general discussion. The list of participants includes some of the best known experts in the field of computers, admixed with a sprinkling of "amateurs" and prominent names outside the field. The following are the topics covered at the individual sessions:

1. Scientists and Decision Making—C. P. Snow, Speaker; E. E. Morison and N. Wiener, Discussants; H. W. Johnson, Moderator.
2. Managerial Decision Making—J. W. Forrester, Speaker; C. C. Holt and R. A. Howard, Discussants; R. C. Sprague, Moderator.
3. Simulation of Human Thinking—H. A. Simon, Speaker; A. Newell, Coauthor; M. L. Minsky and G. A. Miller, Discussants; S. S. Alexander, Moderator.
4. A Library of 2000 A.D.—J. G. Kemeny, Speaker; R. M. Fano and G. W. King, Discussants; W. N. Locke, Moderator.
5. The Computer in the University—A. J. Perlis, Speaker; P. Elias and J. C. R. Licklider, Discussants; D. G. Marquis, Moderator.
6. Time-Sharing Computer Systems—J. McCarthy, Speaker; J. W. Mauchly and G. M. Amdahl, Discussants; E. R. Piore, Moderator.
7. A New Concept in Programming—G. W. Brown, Speaker; G. M. Hopper and D. Sayre, Discussants; P. M. Morse, Moderator.