of space requirements. A short list of books on the subject of special functions is provided. Here the *Handbook of Mathematical Functions with Formulas, Graphs and Mathematical Tables*, Applied Mathematics Series 55, U. S. Government Printing Office, Washington, D. C., 1964 (see *Math. Comp.*, v. 19, 1965, pp. 147–149) is conspicuous by its absence.

The third part of the handbook written by G. Doetsch is on functional transformations. It is the longest of the three parts (253 pages). After an introduction to the subject and Hilbert space (Chapter 1), Fourier transforms (both two-sided and one-sided) are taken up in Chapter 2. Basic results including existence theorems and rules are clearly outlined. Classically, some serious drawbacks to transform theory arose, for in the applications one often encountered functions for which the transforms diverged. Also considerable formalism had become quite common in the use of transforms (e.g., the Dirac δ function). In recent times, a discipline called "Distribution Theory" has been constructed which provides a rigorous framework for the development of a transform theory to meet the deficiencies noted above. The present handbook is noteworthy in that it contains an appendix giving pertinent results on distribution theory, and in Chapter 2 there is presented a modified distribution theory and its connection with Fourier transforms. For physical applications, considerable attention is devoted to idealized filter systems (Fiktive Filtersysteme) and realizable filter systems. In the idealized situations, the topics covered include frequency and phase response, distortion, and high, low, and band pass systems. Chapter 3 is concerned with Laplace transforms and their inversions. Applications are made to ordinary and partial differential equations. Physical applications include vibration problems and analysis and synthesis of electrical networks. The two sided Laplace transforms and Mellin transform are treated in Chapter 4. The two-dimensional Laplace transform is the subject of Chapter 5. A discretized version of the Laplace transform known as the Z-transform is developed in Chapter 6 along with applications to difference equations. Chapter 7 treats finite transforms including those known by the name of Fourier (i.e., finite exponential, cos and sin transforms), Laplace and Hankel. An appendix gives short tables of the following transforms: Fourier, Laplace (one- and two-dimensional), Mellin, Z, finite cos and sin.

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4[7].—V. A. Ditkin & A. P. Prudnikov, *Formulaire pour le Calcul Opèrationnel*, Masson & Cie, Éditeurs, Paris, 1967, 472 pp., 25 cm. Price F 65.

This translation from the Russian gives tables for the evaluation of one- and two-dimensional Laplace transforms (actually p-multiplied Laplace transforms which are called Laplace-Carson transforms) and their inverses. Thus the one-dimensional and two-dimensional transforms tabulated are of the form

$$\bar{f}(p) = p \int_0^\infty e^{-pt} f(t)dt \,,$$

$$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)dxdy \,.$$

Chapter 1 [2] gives $\bar{f}(p)$ [$f(t)$] for a given $f(t)$ [$\bar{f}(p)$] while Chapter 3 [4] gives $\bar{f}(p, q)$ [$f(x, y)$] for a given $f(x, y)$ [$\bar{f}(p, q)$]. The influence of the book *Tables of Integral Trans-*

forms by A. Erdélyi, W. Magnus, F. Oberhettinger, and F. G. Tricomi, Vol. 1, McGraw-Hill Book Co., New York, 1954 (see *MTAC*, Vol. 10, 1956, pp. 252–254) is marked in that the arrangement of the one-dimensional material under review is much akin to that of the work just mentioned. The current work contains more transforms than the Erdélyi et al. volume. For example, there are transforms of numerous sectionally rational functions and Mathieu functions. Aside from this, there appear to be few if any transforms which can not be readily deduced from those in the latter volume.

The list of transforms in Chapters 3 and 4 are the most extensive I have ever seen. True, these results can be built up from the pertinent material in Chapters 1 and 2. Nonetheless, applied workers should appreciate the short cuts provided by the present tables.

We have spot checked various portions of the tables against other lists. The only error found is formula 1.1.4. There in the $f(t)$ column for $(at - b)$ read $f(at - b)$. Regretfully, the printing of the tables is incredibly poor. We have not seen the original Russian edition and so do not know if the present tables were reset or are a photocopy of the original.

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5[7].—Vincent P. Gutschick & Oliver G. Ludwig, *Table of Exact Integrals of Products of Two Associated Legendre Functions*, Department of Chemistry, California Institute of Technology and Department of Chemistry, Villanova University. Ms. of 40 computer sheets deposited in the UMT file.

Let

$$I(l_1, m_1, l_2, m_2) = \int_{-1}^{1} P_{l_1}^{m_1}(x) P_{l_2}^{m_2}(x) dx .$$

This manuscript table presents exact (rational) values of all nonvanishing and nonredundant integrals I, where the l's and m's individually assume all integer values from 0 to 12, inclusive.

An introduction of three pages explains the method of computation and gives other pertinent information.

For a technique to compute a generalization of this integral, see a paper by J. Miller [1]. Another related paper is one by S. Katsura and his coworkers [2].

Y. L. L.

1. James Miller, "Formulas for integrals of products of associated Legendre or Laguerre functions," *Math. Comp.*, v. 17, 1963, pp. 84–87.

2. S. Katsura, Y. Inoue, S. Hamashita & J. E. Kilpatrick, *Tables of Integrals of Threefold and Fourfold Products of Associated Legendre Functions*, The Technology Reports of the Tôhoku University, v. 30, 1965, pp. 93–164. [See *Math. Comp.*, v. 20, 1966, pp. 625–626, RMT **98**.]

6[7].—T͡s. D. Lomkat͡si, *Tablit͡sy Elliptich͡eskoĭ Funkt͡sii Veĭersh͡trassa* (*Tables of Weierstrassian Elliptic Functions*), Computation Center of the Academy of Science of the U.S.S.R., Moscow, 1967, xxxii + 88 pp., 27 cm. Price 1.06 roubles (paperbound).

An elaborate mathematical introduction to these tables was prepared by V. M.