Orthogonal Functions, (8) Laplace Partial Differential Equation and Special Functions, (9) Examination Questions in Special Functions and (10) Tables of Special Functions.

Further comments on the first eight chapters are not required in view of our previous remarks. Chapter 9 is a list of exercises taken from examinations given to students by the Electrotechnical Faculty of the University of Beograd. Chapter 10 contains 5D tables of the basic functions pertinent to the material of Chapters 1–8. Thus, there are tables of the gamma function and its logarithmic derivative, the classical orthogonal polynomials and the various Bessel functions.

A bibliography and notation index enhance the usefulness of the volume.

Y.L.L.

24 [7].—D. S. Mitrinovic, with the assistance of D. D. Tosic & R. R. Janic, *Specijalne Funkcije—Zbornik Zadataka i Problema* (*A Collection of Exercises and Problems*) (in Serbo-Croatian), Naucna Prjiga, Beograd, 1972, xii + 158 pp., 24 cm.

This work contains 375 problems. It can be considered a companion volume to the above reviewed *Special Functions* by the same author. The general remarks made there also pertain here. The first six chapters in both volumes have the same titles. Here, Chapter 7 is a collection of miscellaneous problems.

Except for Chapter 7, each chapter is in two parts. The first part states basic definitions and the second gives problems, all of which can be solved by use of the data in the first part. For the more difficult problems, hints are given and, in certain instances, there are references to the literature. Many of the problems are taken from the problem sections of such journals as Matematicki Vesnik, American Mathematical Monthly and Mathematical Gazette.

Y. L. L.

25 [7].—C. J. Tranter, *Bessel Functions with Some Physical Applications*, Hart Publishing Co., Inc., New York, 1969, ix + 148 pp., 24 cm. Price $10.00.

I quote the first paragraph from the author's preface: "The classic work on Bessel functions is G. N. Watson's monumental treatise. This great work was completed in 1922 and therefore lacks references to developments in the subject during the last forty-five years. Its high standard of rigour and great size also make it somewhat forbidding to the scientist who is only interested in applications to physical problems. I have consequently attempted in the present book to provide a short up-to-date account of Bessel functions which will be useful to the increasing number of scientists and engineers who encounter these functions in their work."

The volume is divided into eight easily read chapters. The chapter titles are indicative of the material covered and are as follows: 1. The solution of Bessel's and associated equations. 2. Some indefinite integrals, expansions and addition theorems. 3. Integral representations and asymptotic expansions. 4. Zeros of Bessel functions, Fourier-Bessel series and Hankel transforms. 5. Some finite and infinite definite integrals containing Bessel functions. 6. Dual integral and dual series equations. 7. The equations of mathematical physics: solution by separation of variables. 8. The equations of mathematical physics: solution by integral transforms.

Contrary to what might be inferred from the second sentence of the preface quoted, for the most part one can only claim that Chapters 6–8 present material not given by Watson. I find the lack of references disturbing. The bibliography consists of only nine books. On p. 82 and p. 84, reference is made to V. G. Smith's formula and to a study of certain integrals by H. F. Willis, respectively, but the sources are not given.

To the novice who wants to get at some tools quickly, the volume will be useful. However, except for the new material noted above, I would much prefer to use Watson. On the plus side of the ledger, each chapter contains a number of exercises which should prove useful for self-study purposes. Chapters 6–8 are enhanced by inclusion of physical applications.

Y. L. L.

26 [7].—SERGE COLOMBO & JEAN LAVOINE, *Transformations de Laplace et de Mellin*, Gauthier-Villars, Paris, 1972, xiii + 170 pp., 24 cm. Price F 96.— (paper bound).

There are several tables of integrals of transforms available. These are all essentially of the same kind since the integrals are defined in the sense of Riemann with the further proviso that we also include integrals of the Cauchy principal value type. The present volume is distinctive in that it contains material not found in previous compilations.

In rather recent times, items such as distributions, modified distributions and pseudo-functions have received considerable attention. The terminology "generalized functions" is often used. It is not our purpose to define these concepts, but an example is useful for the review at hand. With sufficient regularity conditions on $g(t)$, $G(\nu) = \int_\alpha^\beta t^{\nu'+\nu} g(t)\, dt$ is meromorphic in the half plane $R(\nu) > -R(\nu') - 1$. Let Pf stand for pseudo-function. Then $Pf \int_\alpha^\beta g(t)\, dt$ equals $G(-\nu')$ if $-\nu'$ is a regular point, and equals the constant term in the Laurent expansion of $G(\nu)$ about $-\nu'$, if $-\nu'$ is a pole. This is Hadamard's finite part of the integral. Thus, in a table of Laplace transforms $\int_0^\infty e^{-pt} g(t)\, dt$, the Laplace transform of $g(t) = t^{-1/2}$ is $(\pi/p)^{1/2}$, and the corresponding pseudo-function for $g(t) = t^{-1}$ is $-(\gamma + \ln p)$.

The volume at hand is in two parts. The first is a general discussion of integral transforms as ordinarily conceived, generalized functions and their transforms with special emphasis on Laplace transforms (both one-sided and two-sided), Mellin transforms and their inverses. The second is a list of particular transforms of the above type, including ordinary as well as the corresponding pseudo-functions.

This useful tome contains a fairly complete bibliography. A table of notations is also included.

Y. L. L.