Formeln und Sätze für die Speziellen Funktionen der Mathematischen Physik. By W. Magnus and F. Oberhettinger. (Die Grundlehren der Mathematischen Wissenschaften in Einzeldarstellungen, vol. 52.) 2d. ed Berlin-Göttingen-Heidelberg, Springer, 1948. 8+230 pp. 24.60 D.M.

Much of the toil of mathematical physics consists in the transformation of mathematical expressions which have been arrived at by a conceptual process (of theoretical physics) to other more applicable forms. The book under review is intended to be an aid to this process, and should be of great value to the toilers of mathematical physics.

There are no numerical tables or graphs in the book. Except for the necessary preliminary definitions, the collected material is limited to formulas which are likely to be usable in the solution of special problems. Thus all proofs are omitted. Most physical scientists will probably find the omission of questions relating to expansions in orthogonal systems of functions to be more serious. It does not seem that such an addition would entail much greater length of the text. In that fine synoptic treatment by E. Madelung, *Die Mathematischen Hilfsmittel des Physiker*, one finds the relevant material condensed into twlve pages. A treatment on the same order, but extended to cover the additional functions considered, would make the present book more nearly self-contained, and probably unrivaled in comprehensiveness. A mere repetition of the Madelung material would help. Even old worn descriptions, like Mark Twain's diamonds, are better than none at all.

The following suggestions for future editions may also be made:

(A) Every root of an algebraic equation can be expressed as a hypergeometric function of the coefficients of the equation (a fact considered at least as early as 1914 by Mellin); it would be of value to give the corresponding formulae in the chapter on the hypergeometric function.

(B) There are a few slips in the otherwise excellent typography. The appropriate limits of integration and superscripts are missing in several places, as, for example, on pages 2, 98, and 208.

Of the functions common in mathematical physics, only the Lamé functions are omitted altogether, and the treatment of the Mathieu functions is perhaps unduly brief in view of their growing importance in applications.

Chapter I deals with the gamma function, its logarithmic derivative or Ψ function, and the beta function. Chapter II, on the hypergeometric function, treats of the series and its generalizations, inde-