SHORTER NOTICES

Leçons sur les Séries Hypergéométriques et sur quelques Fonctions qui s'y Rattachent. I. Propriétés Générales de l'Équation d'Euler et de Gauss. By É. Goursat. (Actualités Scientifiques et Industrielles, no. 333.) Paris, Hermann, 1936. 92 pp.

Within a comparatively limited space and assuming only the fundamental conceptions about linear differential equations in the complex domain, the author develops the principal facts about the hypergeometric equation

$$x(1 - x)y'' + [\gamma - (\alpha + \beta + 1)x]y' - \alpha\beta y = 0.$$

We find the representation of Kummer's twenty-four integrals in terms of hypergeometric series, provided the numbers γ, $\gamma-\alpha-\beta$, $\alpha-\beta$, are not integers; the representation of these integrals in form of curve integrals (following a general method of Euler); a complete discussion of the case in which the numbers mentioned before are integers; the study of the group of the hypergeometric equation, and also the determination of certain linear relations between various integrals.

The discussion of the logarithmic case is particularly valuable; it can not be found easily in the usual textbooks on differential equations.

In the formula (13) on p. 54 the term $(z^2-1)^n$ has to be replaced by $(1-z^2)^n$.

The present pamphlet is the first part of a monograph planned on hypergeometric series. Unfortunately the author died on November 26, 1936.

G. Szegö

Functions of Real Variables. By William Fogg Osgood. University Press, National University of Peking, 1936. 12+399 pp.

Functions of a Complex Variable. By William Fogg Osgood. University Press, National University of Peking, 1936. 8+257 pp.

These two texts are prepared for the student who has completed a course in "advanced calculus," as for example, one based upon the well known text by the author, and who is about to enter into the deeper mysteries of mathematical analysis. The second of the two works under review presupposes also some knowledge of functions of real variables but does not require as much as is handled in the first of these two volumes. One finds here well-organized courses, systematic, lucid, fundamental, with many brief sets of appropriate exercises, and occasional suggestions for more extensive reading. The technical terms have been kept to a minimum, and have been clearly explained. The aim has been to develop the student's power and to furnish him with a substantial body of classical theorems whose proofs illustrate the methods and whose results provide equipment for further progress. There is throughout a wholesome regard for steady application to essentials, with no vague references to diverting side issues. There is no room here for discussion of such special topics of increasing modern interest for students of real variables as summability of general divergent series, systems of orthogonal functions, or abstract spaces. Even the theory of Lebesgue measure is left for later study. So also in the briefer course in complex variables, Hadamard's three circles theorem and the discussion of the maximum modulus are of course not mentioned. Even the classical topic of elliptic functions claims less than ten pages. The lack of index to either volume seems an unnecessary handicap.

For the prospective teacher or student looking for a sound investment for his