

Riemannschen Integrale erster Gattung" and "Algebraischer Beweis des Satzes von der Anzahl der linearunabhängigen Integrale erster Gattung," the titles of which convey a sufficient idea of the problems solved. However, it is a question whether Christoffel's later work was as novel and fundamental as that which we have discussed at greater length above.

At the end of certain memoirs the editor has added remarks which are helpful. In every way the books present a fine appearance, which may be a superfluous observation since they are published by Teubner.

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#### PROBLEM COLLECTIONS IN CALCULUS.

*Esercizi di Analisi infinitesimale.* Di G. VIVANTI. Puntata I. Completo. Mattei, Pavia, 1912. ix + 470 pp. Price, 15 lire.

*Sammlung von Aufgaben zur Anwendung der Differential- und Integralrechnung.* Von F. DINGELDEY. (Lehrbücher der Mathematischen Wissenschaften XXXII<sub>1,2</sub>.) I. Teil; Differentialrechnung, 1910, vi + 202 pp.; II. Teil; Integralrechnung, 1913, ii + 382 pp. Teubner, Berlin und Leipzig. Price, 6 + 13 marks.

MOST treatises on the calculus contain numerous solved and unsolved problems, but in what follows I wish to indicate some of the more notable separately published problem collections which, chiefly by reason of the industry of Germans, present a most formidable array before an inquirer. There are, on the one hand, works which simply contain problems to solve, as those of Byerly\* and Wolstenholme.† On the other hand, we have the voluminous collection of books which give a synopsis of a certain amount of theory, set forth numerous worked out examples of a somewhat typical nature, and give similar problems for solution. This is the style of the little works by

\* W. E. Byerly, Problems in Differential Calculus supplementary to a Treatise on Differential Calculus. Boston, 1895, pp. viii + 71.

† J. Wolstenholme, Mathematical Problems on the Subjects for the Cambridge Math. Tripos Examination, Part I, 3d ed., Lond., 1891. Problems 1641-1992 on Differential Calculus, Higher Plane Curves, Integral Calculus.