clearer enunciation of the fundamental conceptions of the science, and though the ways in which they approach the subject are different, a general consensus seems to be within view as to the elementary definitions. The main difficulty lies in the introduction into pure arithmetic of the ideas which are forced upon us when

Elemente der Functionenlehre" ('Journal für Mathematik,' vol. lxxiv. p. 172, 1872). This paper refers both to Weierstrass's and Cantor's theories ; H. Kossak, in the pamphlet referred to above (p. 712, note). This contains the principles of Weierstrass's theory ; C. H. Méray, 'Nouveau Précis d'Analyse infinitésimale' (Paris, 1872). The first comprehensive publication of Georg Cantor belongs to the year 1883, 'Grundlagen einer allgemeinen Mannigfaltigkeitslehre' (Leipzig, Teubner). It was preceded by various articles in the 'Journal für Mathematik,' vol. lxxvii. p. 257, vol. lxxxiv. p. 82, and 'Math. Ann.,' vol. xv. p. 1, in which he had introduced and defined several of the terms and conceptions that have since become generally accepted in writings on this subject. These earlier publications, by—or referring to—the pioneers in this new province of mathematical thought, were followed by a number of further expositions by Cantor, Dedekind, and Weierstrass. The principal writings of Cantor have been republished in the 'Acta Mathematica,' vol. ii. Prof. Dedekind published in the year 1888 an important pamphlet, 'Was sind und was sollen die Zahlen,' and has incorporated many of the results of his researches in his later editions of Dirichlet's 'Lectures'; whilst the lines of reasoning peculiar to Weierstrass have become better known through the writings of his pupils and the collected edition of his mathematical works which is now in progress. A complete bibliography is given in three important articles in vol. i. of the German 'Math. Encyc.' by Profs. Schubert (p. 1, &c.), Pringsheim (p. 48, &c.), and Schönflies (p. 184, &c.) Important works, giving a summary and analysis of these various researches, now exist in the mathematical and philosophical literature of France, Germany, Italy, and England. Like the non-Euclidean geometry, the subject has attracted considerable attention also outside purely mathematical circles. Notably Cantor's writings have been exhaustively dealt with from a philosophical point of view — in Germany by Walter Brix (Wundt's 'Philosophische Studien,' vol. v. p. 632, vol. vi. pp. 104 and 261), and by B. Kerry, 'System einer Theorie der Grenz-begriffe' (Leipzig und Wien, 1890); in France by M. Louis Couturat, 'De l'Infini mathématique' (Paris, 1896); and latterly in this country by Mr Bertrand Russell, 'The Principles of Mathematics,' vol. i. (Cambridge, 1903). Italian mathematicians have also dealt largely with the subject, notably G. Peano, who published an important work, 'Arithmetices principia nova methodo exposita' (Turin, 1889).