method for investigating the geometry of the circle and triangle. However, the arrangement of the material is logical and successive topics are developed in a masterly fashion. It should be kept in mind that the author has attempted to fulfill not only the formal requirements of the Wissenschaften but also the demands of the student in geometry both as to the selection and arrangement of material. In this sense the book is a compromise; to quote from the preface "ein einführendes Lehrbuch soll in erster Linie ein Lernbuch sein." A few minor errors in type were observed but these do not detract from the merits of the book. It is a welcome addition to our libraries and will be a valuable reference for students in their first course in modern analytic geometry.

J. I. TRACEY

La Logique des Mathématiques. By Stanislas Zaremba. Mémorial des Sciences Mathématiques, No. 15. Paris, Gauthier-Villars, 1926. 52 pp.

In this number of the Mémorial des Sciences Mathématiques, Professor Zaremba, of the University of Cracow, views logic as a "theory of deductive demonstration" and sketches a "logistic" by means of which a "complete" mathematical demonstration can be effected. In the course of his exposition, in which he "carefully refrains from engaging in psychologic and philosophic speculations," the author formulates fundamental problems in the logic of mathematics still awaiting solution, and gives an explanation of the paradoxes in aggregate theory based on a distinction between the notions *class* and *category*. The text is followed by a good-sized bibliography.

The author excludes from his logic the logic of classes and the logic of relations—theories that "really should not enter into the domain of a general theory of demonstration." His logic is a logic of propositions consisting (1) of a theory of "propositional identities" and (2) of a theory of propositions of logic of the "second kind." The first of these seems to be the theory of "elementary" propositions of Whitehead and Russell's *Principia Mathematica*, whose "theory of deduction" is "the most complete exposition of the theory of propositional identities." The second theory is presumably that of "apparent variables" of the *Principia*. The author, however, does not accept Russel's "theory of types," which has brought into logic "numerous obscurities and extreme complications."

B. A. BERNSTEIN

Esquisse d'Ensemble de la Nomographie. (Mémorial desSciences Mathématiques, No. 4.) By Maurice d'Ocagne. Paris, Gauthier-Villars, 1925. 68 pp.

This is one of the little volumes on interesting mathematical subjects now being published under the direction of Professor Henri Villat as Mémorial des Sciences Mathématiques. It covers in four chapters of twenty-eight sections most of what is known of nomographic theory. To the advanced student the treatment offers interest and charm for the presentation has authority, brevity and elegance. The engineer or physicist seeking help in the actual construction of nomograms will be disappointed, for there are no applications. The reader recognizes at page 39 that the problem of determining under what conditions the equation in three variables $f(z_1,z_2,z_3)=0$ shall have the determinant form

$$\Delta_{123} = |f_i g_i h_i| = 0, \qquad (i = 1, 2, 3),$$

is fundamental and is referred to the literature for the solution. The generalized equation in six variables with corresponding nomograms consisting of three curve nets is also briefly considered. Chapter IV is devoted to nomograms with movable inscribed elements and affords suggestions for the study of nomograms depending on geometric invariants under displacements in the plane. There is a useful bibilography of thirty sources and the printing is almost without error. On page 49 there should be a factor 3 before the parenthesis in the fifth line from the bottom. On page 39, j and k should be deleted from the parenthesis line 14 from the bottom, and v should replace ν in equations 3), 4), and 5), page 30.

L. I. HEWES

Théorie Générale des Séries de Dirichlet. (Mémorial des Sciences Mathématiques, No. 17.) By G. Valiron. Paris, Gauthier-Villars, 1926. 56 pp.

The aim of the series to which this work belongs is to present in brief and compact form the most important results and outlines of methods in various mathematical subjects of current interest. This particular number on Dirichlet series gives an excellent survey of this interesting field which is now growing so rapidly.

One naturally thinks of comparing this book with the only other work devoted exclusively to this subject, namely *The General Theory of Dirichlet's Series* by Hardy and Riesz (Cambridge Tracts in Mathematics and Mathematical Physics, No. 18, published in 1915). They are somewhat similar in general plan and style. That there was a real need for a new book on the subject is seen from the fact that of the bibliography of nearly 150 references given by Valiron, over forty per cent were published since 1915 when the Hardy and Riesz work was issued.

A curious mistake is made on pages 31–32, in a brief discussion of the Hölder and Cesàro methods of summation of divergent series, where the names of these two methods are interchanged.

To those already interested in the subject and to those who wish know something of the results and methods without devoting too much time to it, this compact summary should prove very valuable.

L. L. SMAIL