

*Algèbre*. Vol. 1. *Équivalences, opérations, groupes, anneaux, corps*. By Paul Dubreil. (Cahiers scientifiques, no. 20.) Paris, Gauthiers-Villars, 1946. 7 + 305 pp. 585 fr.

This book is the first volume of a series which is to cover the material necessary to a thorough introduction to modern algebra. The author presents a rather complete discussion of the basic facts of algebra such as the theory of groups, rings and fields. The material is elementary, that is, fundamental definitions and their consequences are discussed in a self-contained fashion. Thus, complications of proofs which usually arise when a mathematical system is specialized do not occur. No appeal to previous knowledge is made; at no place are facts stated without proof. The following list of contents illustrates the aim of the author to emphasize basic principles, constructions and techniques: Chapter I, sets and correspondences; chapter II, operations; chapter III, groups; chapter IV, regular equivalences; chapter V, fields; chapter VI, rings; chapter VII, algebraic equations.

Starting with elementary facts of set theory and emphasis on a single operation (defined by the use of abstract relations or equivalently by subsets of a cartesian product) additional postulates for the underlying mathematical system are gradually introduced. This method of presentation helps clarify the significance and implications of a given set of hypotheses, and the student becomes aware, at an early stage, of the interplay of ideas in a proof. An illustration of this approach may be found in the careful exposition of the general principles for the existence proof of complete fields; all details here are prepared carefully. In this connection it is to be pointed out that the "abstract" work of the initial chapters is by no means dry. The illustrations and exercises are chosen with thought; they are not constructions ad hoc. Rather, the reinterpretation of familiar results are used to enliven the general theory.

It is good to find in this book (p. 209) a clear statement of the distinction which should be made between the concepts of polynomial prevalent in algebra and analysis. The main body of the text is supplemented by four notes which are particularly useful since they emphasize the characterization of the system of natural numbers and the principles of induction.

O. F. G. SCHILLING

*Funzioni analitiche*. By Francesco Tricomi. 2d ed., Bologna, Zanichelli, 1946. 7 + 134 pp. 300 lire.

This is a brief sketch of the elementary theory of analytic functions