

*Pour l'Histoire de la Science Hellène. De Thalès à Empédocle.* By Paul Tannery. Deuxième Édition par A. Diès, avec une préface de M. Federigo Enriques. Paris, Gauthier-Villars, 1930. xxiv+435 pp.

During the half century from about 1880 our knowledge of Greek mathematics has been largely revolutionized by the work of two men, Sir Thomas L. Heath in England and Paul Tannery in France. The work of both men represents the highest type of modern scholarship; it is interesting that both worked largely independently of any university connection.

Paul Tannery's contributions consisted essentially of a series of several hundred monographs throwing light upon the life and achievement of Greek philosophers, astronomers, and mathematicians. In this work Tannery had the devoted assistance of his wife through whose efforts his collected works and correspondence have now been assembled in twelve volumes. In the preface to this volume as it appeared in 1887 Paul Tannery dedicates the work to his wife, the indefatigable companion in his activities.

While these apparently scattered essays may seem to have had no great underlying unity, yet the volumes issued by Tannery on Greek Astronomy (*Pour l'Histoire de l'Astronomie Ancienne*, 1893), Greek Geometry (*Géométrie Grecque*, 1887), and this volume under review on Greek Philosophy, represent in these fields a new point of view, revolutionizing ancient views held and widely taught up to modern times.

The text of this work is left as it appeared in the edition of 1887. However certain tentative notes made by Paul Tannery from time to time in his own personal copy of the edition of 1887 have been included as footnotes. At the same time the references have been given to Diels' *Die Fragmente der Vorsokratiker*, which appeared first in 1903 and which has enjoyed three subsequent editions. A bibliography of pertinent works which have appeared since 1887 constitutes a very useful addition.

In this philosophical work the sections which interest the student of mathematics are particularly those which treat of the relation to oriental science, to Thales, and those on the Pythagorean arithmetic. The amazing material which has recently been discovered relating to Egyptian and Babylonian mathematics has made imperative new studies on the relationships of the oriental to the Greek mathematics. Tannery would have been among the first to accord to the orientals that recognition which is their due.

The historical development of the ideas of the infinitesimal is now understood more completely through the recently discovered work of Archimedes on Method. Tannery was probably the first and certainly the most influential in indicating the actual significance of the work of Zeno, particularly its bearing on the development of mathematical ideas.

The long labors of Tannery and Heath, with also Zeuthen and Heiberg, are now reflected in popular treatises on the historical development of Greek mathematics. These can now be based upon the firm foundation of not only dozens of actual Greek treatises but also upon hundreds of supporting documents showing the progress of these ideas in Greece and Europe. The mathematics of medieval Europe does not yet enjoy any similar complete documentation so essential to real understanding. In the enjoyment of the fruits of the labors of

these pioneers in Greek science modern readers should remember these men with gratitude.

L. C. KARPINSKI

*Funktionentheorie, Zweiter Teil: Anwendungen und Weiterführung der allgemeinen Theorie.* Vierte, verbesserte Auflage. By Konrad Knopp. Sammlung Götschen, No. 703. Berlin and Leipzig, Walter de Gruyter, 1931.

*Aufgabensammlung zur Funktionentheorie, Erster Teil: Aufgaben zur elementaren Funktionentheorie.* Zweite, verbesserte Auflage. By Konrad Knopp. Sammlung Götschen, No. 877. Berlin and Leipzig, Walter de Gruyter, 1931.

The Götschen collection of texts on mathematics provides a course for the student of the theory of analytic functions which is contained in five of the very convenient pocket size volumes. The two volumes entitled *Funktionentheorie* by Knopp have now appeared in a fourth edition. The second edition of the *Einführung in die konforme Abbildung* by Bieberbach appeared in 1927. The other two volumes contain collections of problems.

The first volume of the fourth edition of the *Funktionentheorie* was reviewed in the American Mathematical Monthly, vol. 38, page 529, by an enthusiastic writer who remarked "There is little doubt but that this is the best monograph on functions of a complex variable yet written." While this superlative statement is a little stronger than those of the reviewers of other editions, it indicates the general attitude of all.

The fourth edition of the second volume of the *Funktionentheorie* shows no extensive changes from the third edition which appeared in 1926. Definitions and proofs have received careful scrutiny and minor improvements are most noticeable in the section on doubly-periodic functions and in the chapter on algebraic functions. The book is divided into two approximately equal parts which treat single-valued functions and multiple-valued functions, respectively. The titles of the chapters are as follows: I. Ganze Funktionen; II. Meromorphe Funktionen; III. Periodische Funktionen; IV. Wurzel und Logarithmus; V. Algebraische Funktionen; VI. Das analytische Gebilde.

The first edition of the first volume of the problems appeared in 1923. The second edition brings the material up to date with references to the latest editions of the texts. Each group of problems contains a specific reference to one of the three volumes which cover the theory. In the first part of the book the problems are merely stated and an asterisk used to designate the more difficult ones. Of 183 problems, 41 are so designated. The second part contains solutions of varying degrees of completeness.

W. R. LONGLEY

*Mathematics.* By B. B. Low. London, Longmans, Green and Company, 1931. 448 pp.

In contrast to the purpose of this book, the author recalls, in the preface, the toast: "Here's to mathematics, and may it never be of use to anybody." The present work is intended to be useful to those who are engaged in technical work, such as engineering, physics, or chemistry.

The field covered is wide, extending from elementary algebra to differential