Einführung in die Ebenen und Körperlichen Oerter. By Pierre de Fermat. Translated and edited by H. Wieleitner. Leipzig, Akademische Verlagsgesellschaft, 1923. 22 pp.

This little volume of the well known Ostwald's Klassiker series is even smaller than the pagination would indicate, as the preface occupies pages 5–6, the translation of Fermat's memoir pages 7–17, and the notes pages 18–22. Fermat, like Descartes and his other contemporaries, follows the Greek nomenclature, "plane" loci meaning straight lines and circles, and "solid" loci meaning conics. Curves of higher degree were called "linear." In this essay the various forms which equations of the first or second degree in two variables can take are briefly discussed, and it is shown geometrically that such equations lead to either "plane" or "solid" loci. Besides its interest to the student of the history of mathematics, the volume may be recommended to undergraduates who are working with the general equation of the second degree, as a striking illustration of the gain in power which they obtain through the use of analytic methods. It seems to the reviewer that some of Fermat's tangent constructions and problems in maxima and minima should have been included, thus rounding out one important section of Fermat's mathematical work, and incidentally bringing the book up to a size comparable with the others of the series.

R. B. McClenon

Theorie und Anwendung der Unendlichen Reihen. By K. Knopp. Berlin, J. Springer, 1922. 10 + 474 pp.

Occasionally one finds an individual who has the ability to present mathematical ideas in lectures in a perfectly translucent elegant manner. It is a real pleasure to listen to such a man, and to watch him develop the subject in a skilful way. It is an ideal towards which every one who lectures on mathematics aspires, but which seems so difficult of attainment. Of the same degree of rarity is the man who has the ability to write as though he were presenting the subject matter to a group of individuals, and who does it in such a delightfully clear way that it is a real joy to read and to absorb. Such seems to be the gift of the author of this volume on infinite series.

The book is not intended to give a profound discussion of the subject. That has recently been done by Pringsheim. Its purpose seems rather to be to provide an introduction to some of the fundamental ideas of the theory of functions of a real variable by showing their application in the theory of limits and particularly infinite series and products. The gap between a course in the calculus, and a profound discussion of the theory of functions of a real variable is often very hard to bridge. The study of infinite series in the manner indicated in this book would be an admirable way of doing this very thing.

A brief survey of the contents will indicate the scope of the book. The first part is devoted to a discussion of the irrational number, leading to a definition of limit of a sequence, the fundamental operations and properties of rational number being assumed. Then follows an elementary discussion of convergence of infinite series, leading to a treatment of power series, and the expansions of the elementary functions in power series. Infinite products are treated in the same elementary way. Next comes a more extensive study of infinite series, containing a brief survey of the present situation as far as the convergence and divergence of series is concerned. A chapter on series of functions leads naturally to a brief discussion of Fourier series. Similarly, the treatment of series of complex numbers leads to the mention of Dirichlet and factorial series. The book closes with a chapter on divergent series. Problems are provided at the close of each chapter, to lead the reader into a deeper consideration of the subject.

There is much of value in this book for the person who wants an introduction to the study of infinite series, and the person who wants a survey and derivation of much scattered material of interest in this field. Altogether it is a book very much to be recommended to the person who is making his acquaintance with higher mathematics along analysis lines.

T. H. Hildebrandt

Early Science in Oxford. Part II. *Mathematics.* By R. T. Gunther. London, Oxford University Press, 1922. 101 pp., 10 plates, colored frontispiece.

The early history of American mathematics is most intimately linked with the development of mathematical science in England. Not only the terminology, inevitably, but equally the content of our early text-books was based directly upon the English models which themselves served as texts in the period from 1650 to 1750 or even later. For this reason details concerning early Oxford, so long the center of mathematics in England, are of particular interest to us.

The illustrations of this work are fine and well chosen; the lists of the early mathematicians and astronomers of Oxford are a welcome addition to the literature of the subject. Unfortunately the text (pp. 1–33) reveals an amazing lack of familiarity with recent publications on the history of mathematics, abounding in errors which could have been avoided by reference to books on the shelves of the Bodleian. However, the descriptive catalogue of early mathematical instruments belonging to the University and Colleges of Oxford, the real *raison d'être* of the work in question, is made with great ability and care. This material constitutes a most worthy addition to our knowledge of mathematical instruments which played so large a part in the discovery and exploration period of American history.

It is not worth while to enumerate the errors on pages 1–33. The statements concerning the sources of Recorde's text-books illustrate the careless editing of the work. Recorde's *Ground of Arts* was not "based on manuscripts entitled *De origine artium* and *Arithmeticae principia*" nor was his *Pathway* (sic) *to Knowledge* "printed from manuscripts entitled *Geometriae semita* and *Theoremata Geometriae.*" Neither was the "Whetstone of Witte" "printed . . . from his Secunda pars Arithmeticae." These works were all in English and the material is that current in continental texts of the same period. In passing, it must be said that Recorde