SHORHER NOTICE.


This book is intended to meet the need which has been felt by many during the last years, of a more unified course in freshman mathematics which, without unduly neglecting matters of technique, places more than the usual emphasis upon a genuine understanding of the mathematical concepts and methods. The book has its faults, as have most books, but, in the opinion of the reviewer, it is a fine contribution to the problems in hand and is really a class room text.

The central theme is the idea of functionality. This idea is skillfully kept before the reader's mind, though in the consideration of some topics, as that of trigonometric relations, it is rather lost sight of. This seems to be inherent in the situation and it is possibly unwise and somewhat artificial to insist that everything in such a course must associate itself immediately with the idea of functionality, important and far reaching as that idea is.

The material of the book is presented under five general headings.

In Part I (Introductory Conceptions) thirty-two pages are devoted to the general subject of functions and their representation and thirty-one pages to algebraic principles and their connection with geometry. Great pains is taken to familiarize the reader with the notion of functionality and with the geometrical representation of functions. Many concrete examples are exhibited in detail. Under the second heading is given an elaborate discussion of numbers and their geometrical representation, a statement of the fundamental laws of algebra and a review of elementary algebraic technique.

In Part II two hundred and twenty-nine pages are devoted to the elementary functions: the linear function; the quadratic function; the cubic function; the function $x^n$; the trigonometric functions with a special chapter on trigonometric relations; the logarithmic and exponential functions; numerical computation, including logarithmic solution of triangles, the slide rule, logarithmic paper; the implicit quadratic
functions. Under the last title equations of the second degree are classified according to their graphs. Thus the way is prepared for the conic section as the locus of a point which moves so that its distance from a fixed point is always equal to a constant times its distance from a fixed line.

Part III consists of 118 pages devoted to applications to geometry and contains a thorough treatment of the straight line, the circle, the conic sections, polar coordinates, and parametric equations.

In Part IV seventy-two pages are devoted to the consideration of such algebraic topics as permutations, combinations, probability, the binomial theorem, complex numbers, the general polynomial, the theory of equations and determinants.

Part V (forty-five pages) is a short treatment of the elements of solid analytic geometry.

The idea of slope as the limit of \( \Delta y/\Delta x \) is introduced very early in Part II and is used wherever pertinent throughout the book. In addition to familiarizing the reader with this fundamental idea, the use of the slope facilitates the consideration of the various curves and enables the authors to make more of the subject of maxima and minima than is usual in a freshman course.

The trigonometric functions are defined at once for the general angle. The addition formulas are proved by means of the formulas for the rotation of axes, which have been previously considered. The chapter on logarithms is introduced by a careful, intuitive discussion of the exponential function, well calculated to give the reader a correct feeling as to the significance of exponents positive, negative, zero, rational, irrational.

The avowed purpose of the authors to place "more emphasis on insight and understanding of fundamental conceptions and modes of thought" is well carried out both in the text and in the problem lists. In the text are numerous questions tending to make the student read more thoughtfully and the problem lists contain many exercises of various degrees of difficulty which focus on the fundamental principles under consideration rather than on manipulation or technique. However there is a sufficient number of problems of all kinds and the lists are properly graded.

In the opinion of the reviewer, Part I is too long and (especially chapter two) contains too much discussion not well
chosen to introduce the subject to students during their first
days in college. Chapter three, on the linear function, and
certain parts of the sequel likewise seem to be somewhat
verbose and indirect.

The book is well adapted for use by students who enter
with trigonometry as well as by those who enter without
trigonometry. The reviewer has felt that the program out-
lined in the preface is somewhat too ambitious and still
believes that the average class will have some difficulty in
covering the ground indicated. This emphasizes the need for
greater brevity and directness in certain parts of the text.
However by careful selection the needs of almost any class
can be satisfied.

In the preface the authors announce the book as somewhat
of an experiment and suggest a possible revision. It is too
much to expect that, in these troublous times, such a revision
may appear soon but it is to be hoped that it may not be
delayed too long. In view of the experience of the authors
themselves with the present book, a revised edition would
surely be a finished product. The reviewer is, with the
authors, in doubt as to the advisability of including more
calculus in the text. Probably this can be determined only
by experiment.

The book is attractive in print and in appearance and the
figures are good. There are minor errors but the reviewer has
made no effort to list these.

Any teacher who is interested in the matter of a more
unified course for the freshman year would do well to give
this book a careful examination. Any teacher of freshman
mathematics who is interested in securing, on the part of his
students, a better understanding and appreciation of the
principles and methods of mathematics will find much here
that is helpful whether or not he is interested in this particular
type of course.

A. D. Pitcher.