PLANE GEOMETRY

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EDWARD RUTLEDGE ROBBINS

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Florian Cajori

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BY

EDWARD RUTLEDGE ROBBINS, A.B.

SENIOR MATHEMATICAL MASTER
THE WILLIAM PENN CHARTER SCHOOL

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FOR THOSE WHOSE PRIVILEGE

IT MAY BE TO ACQUIRE A KNOWLEDGE OF

GEOMETRY

THIS VOLUME HAS BEEN WRITTEN

AND TO THE BOYS AND GIRLS WHO LEARN THE ANCIENT SCIENCE

FROM THESE PAGES, AND WHO ESTEEM THE POWER

OF CORRECT REASONING THE MORE

BECAUSE OF THE LOGIC OF

PURE GEOMETRY

THIS VOLUME IS DEDICATED

PREFACE

THE motives actuating the author in the preparation of this text in Geometry have been :

(*a*) *To present a book that has been written for the pupil.*

The object sought in the study of Geometry is not solely to train the mind to accept only those statements as truth for which convincing reasons can be provided, but to cultivate a foresight that will appreciate both the purpose in making a statement and the process of reasoning by which the ultimate truth is established. Thus, the study of this formal science should develop in the pupil the ability to pursue argument coherently, and to establish one truth by the aid of other known truths, in logical order.

The more mature members of a class do not require that the reason for every declaration be given in full in the text; still, to omit it altogether, wrongs those pupils who do not know and cannot perceive the correct reason. But to ask for the reason and to print the paragraph reference meets the requirements of the various degrees of intellectual capacity and maturity in every class. The pupil who knows and knows that he knows need not consult the paragraph cited; the pupil who does not know may learn for himself the correct reason by the reference. It is obvious that the greater progress an individual makes in assimilating the subject and in entering into its spirit, the less need there will be for the printed reference.

(*b*) *To stimulate the mental activity of the pupil.*

To compel a young student to supply his own demonstrations, in other words, to think and reason for himself, frequently proves unprofitable as well as unpleasant, and engenders in the learner a distaste for a study he has the right to admire and to delight in. The short-sighted youth absorbs his Geometry by memorizing, only to find that his memory has been an enemy, and while he himself is becoming more and more confused, his thoughtful companion is making greater and greater progress. The earlier he discovers his error the better, and the plan of this text gives him an opportunity to reëstablish himself with his class. It is not calculated to produce accomplished geometricians at the completion of the first book, but to aid the learner in his progress throughout the volume, wherever experience has shown that he is likely to require assistance. It is calculated, under good instruction, to develop a clear conception of the geometric idea, and to produce at the end of the course a rational individual and a friend of this particular science.

(*c*) *To bring the pupil to the theorems and their demonstrations — the real subject-matter of Geometry — as early in the study as possible.*

(*d*) *To explain rather than formally demonstrate the simple fundamental truths.*

(*e*) *To apply each theorem in the demonstration of other theorems as promptly as possible.*

(*f*) *To present a text that will be clear, consistent, teachable, and sound.*

The experienced teacher will observe:

(*a*) *The economy of arrangement.*

Many of the smaller figures are placed at the side of the page rather than at the center. The individual numbers of theorems are omitted.

(*b*) *The superior character of the diagrams.*

(*c*) *The omission of the words "since" and "for."*

The advance statement is made and the reason asked for and usually cited. The inquiring mind fails to understand the force of preceding and following some statements with the same reason.

(*d*) *Originals that are carefully classified, graded, and placed after the natural subdivisions of the subject-matter.*

(*e*) *The independence of these originals.*

Every exercise can be solved or demonstrated without the use of any other exercise. Only the truths in the numbered paragraphs are necessary in working originals.

(*f*) *The setting of every theorem, corollary, and problem of the text proper in fullface type.*

(*g*) *The consistent use of such terms as "vertical angles," "vertex-angle," "adjacent angles," "angles adjoining a side," and others.*

(*h*) *The full treatment of measurement and the illustrations of the terms employed.*

(*i*) *The summaries that precede earlier collections of original exercises.*

(*j*) *The emphasis given to the discussion of original constructions.*