# RIDER PAPERS ON EUCLID (BOOKS I. AND II.). GRADUATED AND ARRANGED IN ORDER OF DIFFICULTY

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Rider Papers on Euclid (Books I. and II.). Graduated and Arranged in Order of Difficulty by Rupert Deakin

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RUPERT DEAKIN

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# RIDER PAPERS

## ON EUCLID

(BOOKS I. AND II.)

GRADUATED AND ARRANGED IN ORDER OF DIFFICULTY

*WITH AN INTRODUCTION ON TEACHING EUCLID*

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# INTRODUCTION.

## ON TEACHING EUCLID.

THIS little book has been written specially for my own classes and parts of it have been in use for several years.

In teaching Euclid the first aim should be to get the Definitions, Postulates, Axioms, and Propositions 1 to 12 in Book I. known thoroughly by every boy in the class. Then the Rider Papers in Part I. of this book may be given to be answered. They will be found quite easy enough for boys to answer at home, and if one paper is set each week, Part I. will be sufficient for half a term. My own plan has been to look over each boy's answers and mark them; on the next day to return them to the boys and go through on the blackboard such Riders as have not been answered by the majority of the boys in the class. I have usually found fifteen minutes ample time for this work.

In writing and arranging these Papers I have

constantly kept in view the difficulties that experience shows me all students feel more or less in solving Riders. The first of these difficulties is the inability to draw a proper figure. In the first part of these Papers I have therefore asked for different figures to be drawn; and in all these cases I mean drawn without Proof. Every student should also draw a figure of each Proposition in Euclid, and it is a good plan to draw these figures in an exercise book, one on each page, so that they may be used for saying the Propositions.

Another difficulty to beginners arises from the general terms in which Propositions are usually stated. For example, almost all editions of Euclid contain this Rider :—"The straight line drawn from the vertex of an isosceles triangle to the middle point of the base is perpendicular to the base." Boys who have learnt Euclid for years will refuse to attempt the Rider in this form. But the same Rider may be stated thus :—"Draw an isosceles triangle ABC, having the side AB equal to the side AC. Bisect the base BC in D and join AD. Prove that the angles ADB and ADC are right angles." In this form the Rider will be solved by almost every boy who has learnt the first twelve Propositions in Euclid. Throughout these Papers therefore all Riders, except the simplest, are stated first as Particular Propositions, and afterwards the most important Riders are repeated as General Propositions.

It would be a great gain to education if we could get rid of the idea that there are a limited number of important Propositions, all contained in Euclid, which must be learnt and remembered; but that there are also an endless number of unimportant Riders, which no one ever can remember. We should rather aim at teaching our pupils that there are different methods of Proof, and that different Propositions or Riders, whether in Euclid or not, are examples of these methods, and serve, just like the examples in Arithmetic or Algebra, to illustrate the different methods of proceeding. It is true that the results we obtain vary in value; but it is also true that many of the most important Propositions are not to be found in Euclid. In teaching Euclid therefore it is a good plan to treat all the Propositions in Book I. as Riders. Before setting a Proposition to be learnt, call the class round the blackboard; state the enunciation, and draw the figure; and then ask anyone to guess how it is proved. In this way the learning of Euclid is made interesting, and the working of Riders is looked upon as the solution of a number of puzzles rather than as an odious task.

The Riders in this book are all important Propositions. The student who has worked through them will be acquainted with all the chief results arrived at in that part of elementary Geometry of which they treat.

The Papers in each Part are graduated in diffi-