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Trieste

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NATURAL ARITHMETIC

BOOK II

BY

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PURPOSES AND DISTINCTIVE FEATURES

THE purposes of this series of Arithmetics are: —

1. *To present the subjects in a spiral order.*

Instead of presenting the general subjects of addition, subtraction, multiplication, division, fractions, etc., as complete wholes in regular succession, each subject is divided into parts with reference to the difficulty of the principles involved. The easier principles of various subjects are treated together, while the more difficult principles are reserved until the child has gained the power to apprehend them easily.

2. *To make the work easy.*

In the belief that it is better to keep mathematical work a little behind the child's mental grasp than to advance it beyond that limit, the work designed for the different grades has been made somewhat easier than that usually found in text-books. The pupil is kept busy with a varied application of the principles that he has already mastered instead of being too rapidly crowded forward into greater difficulties.

3. *To give the subject variety and interest.*

The problems are based upon facts and principles gathered from the different branches of study, as history, geography, nature study, astronomy, and physics, as well as on the customary commercial transactions, thus correlating arithmetic with other studies and adding distinctly to its vividness and interest.

4. *To develop genuine mathematical thought.*

There is a large amount of mental work interspersed with the written work. Each new subject is first developed with numbers that are not too large for mental solution. After the principle has been well established, written practice with larger numbers is introduced. Originality is also promoted by exercises requiring the pupils to make problems for themselves from given data.

5. *To give prominence to the idea of magnitude.*

The psychological fact that all mathematical knowledge is a system of relations, or ratios, has been recognized throughout the series. For the purpose of suggesting to the pupils the application of number to magnitude, the simple geometric forms have been gradually introduced.

BOOK II takes up the development of the subject at the point where Book I ends, but in order to avoid too great dependence upon the earlier book the more important subjects in Book I are briefly reviewed.

The principles of common fractions, decimal fractions, and percentage are gradually developed in their simpler aspects, the more difficult parts being reserved for Book III.

The method with each subject is first to lead the child to a genuine grasp of the conceptions involved, withholding until later a formal statement of the processes. Considerable use is made of diagrams representing quantity, which are designed both as aids to correct thinking and as stimulants to the exercise of mathematical imagination.

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