A MENTAL ARITHMETIC DESIGNED FOR USE IN COMMON SCHOOLS AND ACADEMIES

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A Mental Arithmetic Designed for Use in Common Schools and Academies by Edwin P. Seaver & George A. Walton

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BY

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PREFACE.

THE main purpose of this book is to provide an ample store of such questions as are best suited to drill in elementary arithmetical operations and to oral practice in analysis and reasoning.

That such training is most effectively given by means of questions easy enough to be worked mentally is an accepted opinion among experienced teachers. Accordingly, mental arithmetic fills a large place in courses of arithmetical study, and a separate book is often found to be a convenience, if not a necessity. It is not, however, as a substitute for written arithmetic, nor yet as a distinct subject set apart from the other, that mental arithmetic will best serve its purpose; for the two subjects are really one, differing chiefly in method of expression, and yielding their best fruits when both are applied to the same topics at the same time. Hence mental arithmetic is an appropriate and useful study at all stages of the pupil's progress; and a book on the subject is not properly one member in a graded series of text-books, but is rather to be regarded as a companion to them, affording a parallel enlargement of the whole course.

Such is the view that has governed in the preparation of this book. A formal and systematic development of the science of arithmetic through definitions, principles, and rules is not here undertaken. That will be found in other books, the use of which will accompany this. Neither is this a beginner's book. Such knowledge as a child gains in a primary school is here assumed at the outset. The first few sections will be found serviceable in reviewing and solidifying that knowledge. But starting with such primary knowledge, the pupil will here find a carefully selected and graded course of mental exercises which may usefully accompany his other arithmetical study to the end. He will find every important topic in arithmetic illustrated by a series of simple questions, which will lead him gradually by way of analysis and induction to a practical knowledge of the underlying principles. This practical knowledge of principles he will be led to apply until processes of reasoning become familiar through habitual use. Thus he will be prepared in the best way to understand the more artificial processes of written arithmetic.

It is deemed essential to right training in reasoning that the pupil should be allowed to reason in his own way, and then to give an account of his process in his own language. With the acts of reasoning, if actually performed, the teacher will have very little trouble; but the forms of expression used by children will often be both crude and inexact. But the remedy is not to reject the pupil's expression, and drill him in some set form found ready-made in the book or devised by the teacher; it is rather to accept his expression, however crude, as a basis to work upon, and then guide his thinking so that he may modify his expression until it assumes a good form, the teacher bearing in mind always that a form of expression however excellent possesses no value whatever if it is not a genuine expression of the pupil's own thought.

The forms of solution, rather sparingly scattered through this book, are not to be regarded as models for drill, but rather as suggestions to aid the pupil in reasoning. And the same remark applies to the forms of solution given in the Appendix.

The questions filling the body of the book fall into two general classes. First are questions which require one simple arithmetical operation, the nature of which is perceived the moment the question is read, and which is then instantly performed. Such questions do not require previous study, and are intended for a form of class exercise which may be called *arithmetic at sight*. The Drill tables and most of the practical questions in the earlier part of the book belong to this class.

The other class of questions consists of those which require more deliberate thought, and are more especially adapted to oral practice in analysis and reasoning. These questions are more abundant in the latter part of the book, and the last sections are filled with miscellaneous questions which are wholly of this kind.

The very favorable reception accorded to their other books, leads the authors to hope that this work may be found acceptable and useful.

NEWTON, August, 1884.

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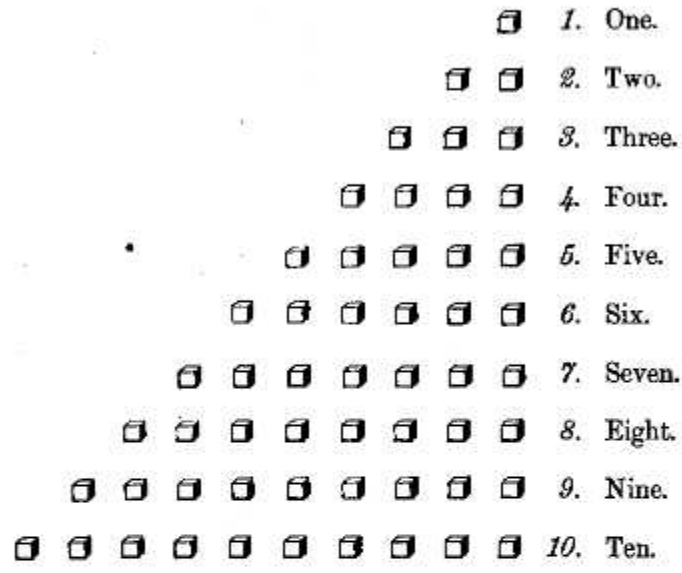

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