ELEMENTS OF ALGEBRA: A COURSE FOR GRAMMAR SCHOOLS AND BEGINNERS IN PUBLIC AND PRIVATE SCHOOLS

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Elements of algebra: a course for grammar schools and beginners in public and private schools
by William J. Milne

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WILLIAM J. MILNE

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A COURSE FOR GRAMMAR SCHOOLS AND BEGINNERS IN PUBLIC AND PRIVATE SCHOOLS

BY

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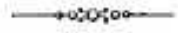

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PREFACE.

ALGEBRA has not always proved to be an interesting subject to the younger classes in our secondary or lower schools; indeed, in very many instances it has been greatly disliked by the students in such institutions. Two causes, chiefly, have conspired to produce this unfortunate condition of affairs, — one the unattractive and uninteresting method of presenting the subject; the other, the difficulty of the examples and the complexity of the problems presented to the pupils for solution.

It is believed that this text-book presents the elementary facts of the science in such a manner that a deep interest will be awakened in algebraic processes, and that the examples which the student is required to solve are quite within the scope of his ability to master.

The author has in several instances departed from the order of classification commonly followed in text-books on algebra, because he has preferred to arouse an interest in the subject rather than to follow an order which is scientific, but which does not introduce the student to the attractive features of the study until he has mastered all the processes employed with most forms of algebraic quantities. And yet in no instance have erroneous mathematical ideas

been taught, nor has correct reasoning ever been sacrificed for the purpose of exciting such interest.

The ideas of number which the pupil has gained in arithmetic have been associated with those involved in algebra in such a way that no difficulty may be experienced in passing from reasoning upon definite numbers to reasoning upon general numbers.

The treatment of equations is introduced at the beginning, and it is presented throughout the book, wherever it is possible to do so advantageously, because, since elementary algebra treats of almost nothing except the equation and general numbers, the student should be led to a comprehension of the simpler forms of the equation as soon as possible.

The method of presentation exemplified in the other books of the series has been followed here, because it is recognized as pedagogically correct and because it has met with general approbation.

The work is designed to present the merest elements of the science, and yet it is believed that the method of presentation, the illustration and application of mathematical principles, and the knowledge gained from the solution of problems, will familiarize the student with the fundamental principles of the science to such a degree that easy and rapid progress in the more abstract phases of the subject will be secured whenever he pursues the subject farther.

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ELEMENTS OF ALGEBRA.

ALGEBRAIC PROCESSES.

1. PROBLEM. A farmer had 444 sheep in two fields, one of which contained three times as many sheep as the other. How many sheep had he in each field?

ARITHMETICAL SOLUTION.

A certain number = the number in one field.
Then 3 times that number = the number in the other field.
And 4 times that number = the number in both fields.
Therefore 4 times that number = 444.
The number = 111, the number in one field.
3 times 111 = 333, the number in the other field.

The solution given above may be abbreviated by using the letter x for the expressions *a certain number* and *that number*. In algebra, however, it is customary to represent a number whose value is to be found by x or by some other one of the last letters of the alphabet.

ALGEBRAIC SOLUTION.

Let x = the number in one field.
Then $3x$ = the number in the other field.
And $4x$ = the number in both fields.
Therefore $4x = 444$.
$x = 111$, the number in one field.
$3x = 333$, the number in the other field.