seems a piece of pure assumption, and the illustration of the subject, which is given, is based on an entirely *different* notion of division.

As a proof, in multiplication, he gives a long rule for casting out the nines, and refers the student for an explanation to Hamblin Smith's Algebra. So in finding the H. C. F. and L. C. M. of a set of numbers, he makes the same reference to algebra, giving no hint at all by way of explanation. Now it is quite possible that there may be in this Canada of ours, honest, intelligent young men and women who are not in the way of studying algebra, and who may yet desire to be fairly thorough arithmeticians. Is it fair to these to leave them thus in the dark? In Article 52 he defines numbers as "the measures of quantities." Elsewhere he speaks of a *Fraction* as expressing the measure of a quantity, and yet he says $\frac{2}{3} \times \frac{4}{5}$ has no meaning until we extend the meaning of the sign × and make it mean *of*. This is not very logical.

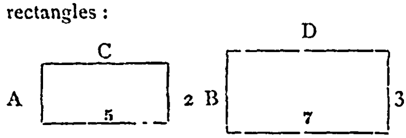
In Article 82, in reference to decimals, he says: "To save trouble, a method of notation is used," etc., as if a new method were here introduced, while, in Article 84, he proceeds to shew that it is merely the common method. As to finding the square root of a number, a page—or in fact six pages—are taken up in describing the process; not one word is given by way of explanation, unless, indeed, it be this: "And we *conclude* that 35 is the square root of 1225," "conclude" having no meaning that I can see other than *finish*.

For finding the cube root, in the same way he gives a long rule, interspersed with figures, and no explanation, not even a reference to his Algebra for one.

These are some specimens of our author's carefulness and precision; of the way in which he fulfils the excellent promise in his preface. Shall we follow him unquestioningly in his condemnation of Proportion, and in the adoption of his Unitary Method? I think not. But perhaps he is a safer guide when treating of these. We shall see.

He defines the ratio of A to B as the relative greatness of A with respect to B, not stating whether it has reference to *difference* or *quotity*. He says the ratio of 2 to 3 *is* represented in arithmetic by the fraction $\frac{2}{3}$, which is a measure and ∴ a *number*; not observing that a *relation* cannot be expressed by a *number*, and that the true explanation is that 2 is to 3 as $\frac{2}{3}$ is to 1. Just as $12 : 3 = 4$ is not correct, but $12 : 3 = 4 : 1$ is in every way correct.

Again he says, "Ratios are compounded by multiplying together the fractions which represent them," as $2 : 3$ and $5 : 7$, $\frac{2}{3} \times \frac{5}{7} = \frac{10}{21}$ = the compounded ratio. Looking at these rectangles:



If $A = 2$ and $B = 3$ then $A : B = 2 : 3$ and $C : D = 5 : 7$. These are the ratios of *lines* to each other. But the rectangles depend for their magnitude on neither of these alone, but on both at once (that is, on these compounded). And the ratio $A C : B D$: or $10 : 21$ is the ratio of the two *surfaces*: and it has been found without references to *fractions*, for there is no fractional notion in the case. In Proportion "The ratio $6 : 12$ is equal to the ratio $4 : 8$, because the fraction $\frac{6}{12}$ = the fraction $\frac{4}{8}$. Nonsense! the ratio $6 : 12$ = the ratio $4 : 8$, because each of them is equal to the ratio $1 : 2$. To this double subject the author gives scarcely three pages, including twelve illustrative examples. Then, of the twelve examples for exercise, only one is in concrete numbers, although in the Commercial part of the book. Not quite fair play, as it seems to me.

We are now about to enter the sacred territory, J. H. Smith *duce*.

"*Procul, O procul este, etc.*"

"The *Unitary Method*, which is rapidly displacing the Rule of Three, will be gradually explained in this and the succeeding sections."

Ex. 1. If 23 bullocks cost £483, what is the cost of one bullock?

Since 23 bullocks cost £483,
1 bullock will cost £$\frac{483}{23}$ or £21.