

which, when multiplied by itself, will produce the given number. Thus 6 is the square root of 36; for $6 \times 6 = 36$.

The square root of a number is sometimes denoted by placing the sign $\sqrt{}$ before the number, or by placing the fraction $\frac{1}{2}$ above the number a little to the right. Thus $\sqrt{36}$, or $(36)^{\frac{1}{2}}$ denotes the square root of 36; so that $\sqrt{36}$, or $(36)^{\frac{1}{2}} = 6$.

143. *Rule for extracting the Square Root of a number.*

Place a point or dot over the units' place of the given number; and thence over every second figure to the left of that place; and thence also over every second figure to the right, when the number contains decimals, annexing a cypher when the number of decimal figures is odd; thus dividing the given number into periods. The number of points over the whole numbers and decimals respectively will shew the number of whole numbers and decimals respectively in the square root.

Find the greatest number whose square is contained in the first period at the left; this is the first figure in the root, which place in the form of a quotient to the right of the given number. Subtract its square from the first period, and to the remainder bring down, on the right, the second period.

Divide the number thus formed, omitting the last figure, by twice the part of the root already obtained, and annex the result to the root and also to the divisor.

Then multiply the divisor, as it now stands, by the part of the root last obtained, and subtract the product from the number formed, as above mentioned, by the first remainder and second period.

If there be more periods to be brought down, the operation must be repeated.

Ex. 1. Find the square root of 1369.

$$\begin{array}{r} 3^2 = 9 \\ \{2 \times 3 = 6\} \quad 67 \overline{) 1369} \\ \underline{469} \\ 469 \end{array}$$

After pointing, according to the Rule, we take the first period, or 13, and find the greatest number whose square is contained in it. Since the square of 3 is 9, and that

of 4 is 16, it is clear that 3 is the greatest number whose square is contained in 13; therefore place 3 in the form of a quotient to the right of the given number. Square this number, and put down the square under the 13; subtract it from the 13, and to the remainder 4 affix the next period 69, thus forming the number 469. Take 2×3 , or 6, for a divisor, di-