QUADRATURE OF THE ClRCLE

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A circular area is equal to the square on a line equal to the quadrant of the circumference; and the area of a square is equal to the area of the circle whose circumference is equal to the perimeter of the square.

To quadrate the circle is to find the side of a square whose perimeter equals that of the given circle; rectification of the circle requires to find a right line equal to the circumference of the given circle. The square on a line equal to the arc of 90^{o} fulfills both of the said requirements.

It is impossible to quadrate the circle by taking the diameter as the linear unit, because the square root of the product of the diameter by the quad-rant of the circumference produces the side of a square which equals 9 when the quadrant equals 8.

It is not mathematically consistent that it should take the side of a square whose perimeter equals that of a greater circle to measure the space contained within the limits of a less circle.

Were this true, it would require a piece of tire iron 18 feet to bind a wagon wheel 16 feet in circumference.

This new measure of the circle has happily brought to light the ratio of the chord and arc of 90^{o}, which is as 7:8; and also the ratio of the diagonal and one side of a square, which is as 10:7. These two ratios show the numerical relation of diameter to circumference to be as 1:4.

Authorities will please note that while the finite ratio (5/4:4) represents the area of the circle to be more than the orthodox ratio, yet the ratio (3.1416) represents the area of a circle whose circumference equals 4 two % greater than the finite ratio (5/4:4), as will be seen by comparing the terms of their respective proportions, stated as follows: 1:3.20:: 1.25:4, 1:3.1416::1.2732:4.

It will be observed that the product of the extremes is equal to the product of the means in the first statement, while they fail to agree in the second proportion. Furthermore, the square on a line equal to the arc of 90^{o} shows very clearly that the ratio of the circle is the same in principle as that of the square. For example, if we multiply the perimeter of a square (the sum of its sides) by 1/4 of one side the product equals the sum of two sides by 1/2 of one side, which equals the square on one side.

Again, the number required to express the units of length in 1/4 of a right line, is the square root of the number representing the squares of the linear unit bounded by it in the form of a square whose ratio is as 1:4.

These properties of the ratio of the square apply to the circle without an exception, as is further sustained by the following formula to express the numerical measure of both *circle* and *square*.

Let *C* represent the circumference of a circle whose quadrant is *unity*, Q 1/2 the quadrant, and CQ^2 will apply to the numerical measure of a circle and a square.

We are now able to get the true and finite dimensions of a circle by the exact ratio 5/4: 4, and have simply to divide the circumference by 4 and square the quotient to compute the area.