IMPORTANT DISCOVERIES IN PLANE AND SOLID GEOMETRY

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IMPORTANT DISCOVERIES IN PLANE AND SOLID GEOMETRY

Trieste

IMPORTANT DISCOVERIES

IN PLANE AND SOLID GEOMETRY

CONSISTING OF

THE RELATION OF POLYGONS TO CIRCLES
AND THE
EQUALIZING OF PERIMETERS TO CIRCUMFERENCES
AND
DRAWING CURVED LINES EQUAL TO STRAIGHT LINES
THE
TRISECTION OF AN ANGLE
AND THE
DUPLICATION OF THE CUBE

By P. D. WOODLOCK

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PREFACE.

In publishing this book the author feels confident that he has added something to geometrical science, which has not heretofore been known.

He especially invites geometricians and mathematicians to examine carefully and without bias, the several propositions and problems, and their demonstrations, contained in the book, and he has no doubt that they will find interest in every page.

Some of the problems appearing in this book have occupied the attention of geometricians in all ages since the introduction of geometry as a science, yet all attempts at their solution have been unsuccessful down to the present time. That the author of this little work has been rewarded with the discovery of the true solutions of these problems he confidently leaves to the consideration and candid judgment of geometricians throughout the world.

PART I.

CONSISTING OF

PRELIMINARY DEMONSTRATIONS

LEADING TO THE

EQUALIZING OF CURVED LINES TO STRAIGHT LINES.

PRELIMINARY DEMONSTRATIONS.

PROPOSITION A.

To form a series of polygons upon a square or equilateral triangle having the same center and equal perimeters, the number of their sides being to each other consecutively in the ratio of two.

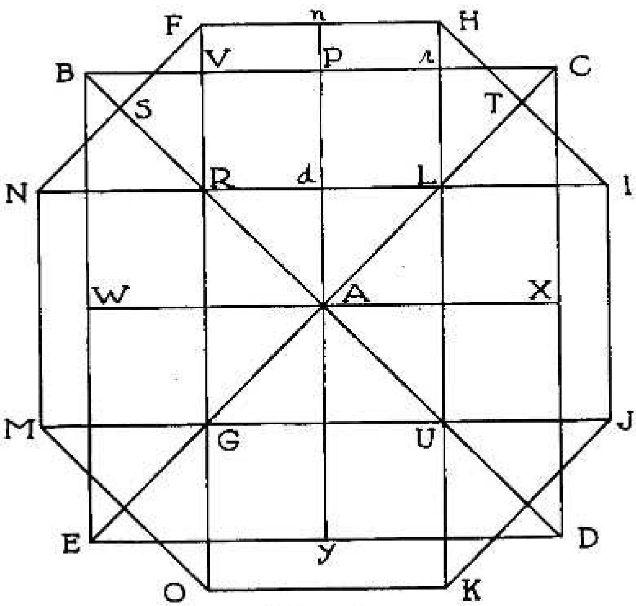

FIGURE A.

In Figure A, let BCDE be a square, and draw the diagonals BD and CE, bisecting each other at A, which is the center of the square, and draw the line AP. Then AP is the radius of the inscribed, and AC is the radius of the circumscribed circles. Then bisect the lines AB and AC at R and L, and draw the lines RF and LH equal to RB and LC respectively, and parallel to AP, and draw the

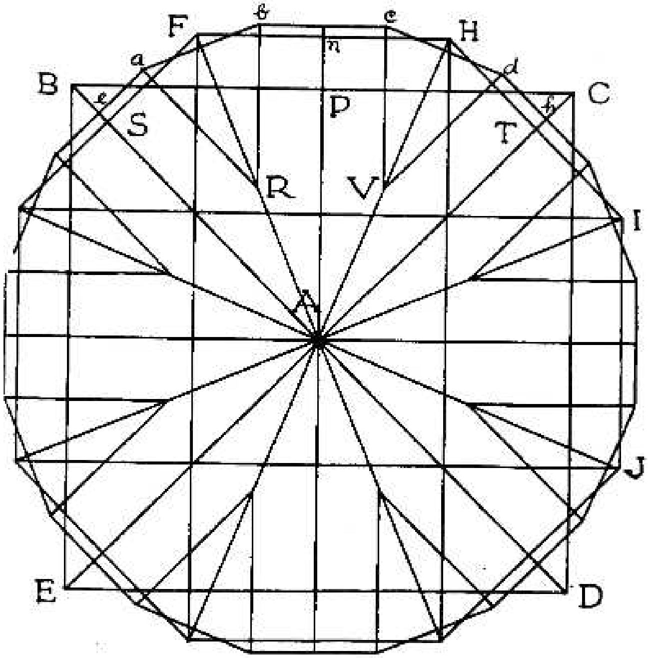

FIGURE B.

lines AW, AX and Ay, bisecting the lines BE, CD, and DE, and draw RN equal to RB, and parallel to AW, and draw LI equal to LC, and parallel to AX. And in like manner bisect the lines AE and AD at G and U, and draw the lines GM and GO, equal to GE, and draw UK and

UJ, equal to UD, and draw the lines RL, LU, UG, and GR, and draw the lines FH, HI, IJ, JK, KO, OM, MN and NF. And the figure thus formed is an octagon, whose perimeter is equal to the perimeter of the square BCDE.

Now the line Cr is perpendicular to LH, and HT is perpendicular to LC. And LH being equal to LC, therefore

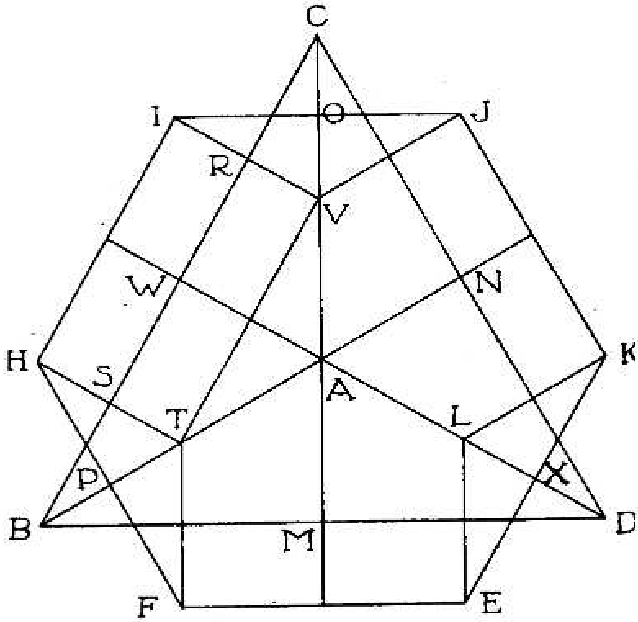

FIGURE C.

the line Cr equals HT. In like manner FS = BV, and FH = Vr. Hence the lines SF + FH + HT = BV + Vr + rC = BC, which is a side of the square. Now the lines SF + FH + HT are equal to one-fourth of the perimeter of the octagon. And BC is one-fourth of the perimeter