

NOTE ON MR. GEORGE PEIRCE'S APPROXIMATE CONSTRUCTION FOR π .

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THERE appeared in the BULLETIN for July, 1901, a construction by Mr. George Peirce for obtaining the approximate length of π in a circle of radius 1. There are numerous constructions of this kind, and it may be of interest to indicate the method which permits a comparison of these constructions with one another as to their graphical simplicity. Their relative theoretic exactness is determined by calculating the true value of the length which in each case approximately represents π .

As examples of these comparisons, I take the construction of Mr. Peirce and three others, and employ the geometrographic method (see Mathematical papers of the Chicago congress, 1893, p. 143, or in more complete form, *La géométrie*, Paris, Naud, 1901) which is applicable with rigor and facility. I will designate by :

A. The construction of Mr. Peirce.

B A very old construction, attributed to Heinrich Kühn, in the *Novi Commentarii Acad. Petropol.*, Vol. III (1753).

C. A construction given by myself for $\pi/2$.

D. A construction due to Professor Pleskot of the Czech Realschule of Prague (*Journal de mathématiques élémentaires* de M. de Longchamps, 1895, p. 125); this also gives $\pi/2$.

The geometrographic notation is so simple that I indicate it at once, so that any geometer not acquainted with it may have no difficulty in comprehending this note.

1. Placing *one* point of the compass on a given point is designated as "operation C_1 " or op. (C_1); hence, speculatively, including a given length between the points is op. ($2C_1$).

2. Placing a point of the compass on an *undetermined* point of a straight line is op. (C_2).

3. Drawing a circle is op. (C_3).

4. Making the edge of the ruler pass through *one* point is op. (R_1); hence, speculatively, making it pass through two points is op. ($2R_1$).

5. Drawing a straight line is op. (R_2).

This is all for the *canonical* geometrography, *i. e.*, where the only instruments used are ruler and compass.