

either explicitly or tacitly, that demand is a function of price, adequately represented by the notation  $D=f(p)$ . Cournot is also not alone in considering profit as the central quantity in economics, whose maximum determines the other quantities; and given the industrial habits of his time, he is hardly to be blamed.

The translation seems to be carefully done, and the editor has added numerous notes designed to assist the less mathematical reader. No attempt has been made to bring the bibliography down to the date of this edition; in the thirty years since the treatise first appeared in English the additions to the bibliography included in that edition would presumably have surpassed the desirable limits for the book. There would have been service rendered, however, if the editor had used the resources at his disposal to clear up the ambiguous character of some of the references already given. This is not said to diminish the gratitude which the public owes to both editor and translator in making again accessible, after ninety years, the eternal freshness of this brief classic.

G. C. EVANS

### THREE BOOKS ON NON-EUCLIDEAN GEOMETRY

*Vorlesungen über Nicht-Euklidische Geometrie.* By Felix Klein. Prepared anew for publication by W. Rosemann. Die Grundlehren der mathematischen Wissenschaften in Einzeldarstellungen, vol. 26. Berlin, Julius Springer, 1928. xii+326 pp. Price 18 marks unbound, 19.50 marks in linen.

*Nicht-Euklidische Geometrie. Hyperbolische Geometrie der Ebene.* By Richard Baldus. Sammlung Götschen, No. 970. Berlin and Leipzig, Walter de Gruyter, 1927. 152 pp. Price 1.50 marks.

*La Géométrie Non-Euclidienne.* By P. Barbarin. Third edition, followed by notes by A. Buhl. Collection "Scientia," No. 15. Paris, Gauthier-Villars, 1928. 176 pp.

In a note to his Erlanger Programm, Klein justified his avoidance of the word "non-euclidean" in that address, saying: "There are connected with the designation 'non-euclidean geometry' a number of unmathematical conceptions which occasion as much enthusiasm on the one side as horror on the other, but which have nothing whatever to do with our purely mathematical considerations." This may be a reason why, aside from a few glances forward, that same word is absent from over one half of his admirable treatise, *Vorlesungen über Nicht-Euklidische Geometrie*. In fact, the reader with a purely euclidean past will be led so tactfully and persuasively from his usual geometry to the more general one that he may long wonder wherein lies the book's right to its title. He will be an admirer of the greater beauty and symmetry of non-euclidean space without realizing how far he has left euclidean space behind him.

Part one of the book is an introduction to projective geometry. We pass rapidly from elementary affine coordinates in euclidean space to homogeneous and general projective coordinates. Thus, the arithmetical basis