A History of Geometrical Methods. By J. L. Coolidge. Oxford, Clarendon Press, 1940. 18+452 pp. $10.00.

Notwithstanding the rich literature on geometry, there has been no comprehensive synopsis of the subject for a long time. The author has set himself the task of presenting in outline the development of geometry from the beginnings to the present, emphasizing in particular the various methods employed, taking for a general model Chasles's *Aperçue Historique*, which first appeared in 1837. The field is so large that not all material could be considered; selections must be made, and no fixed criterion can be set down for eligibility.

The book is divided into three parts: synthetic, algebraic, and differential. It is explicitly stated that topology is excluded from consideration. The first part covers 116 pages. It includes a sketchy summary of practically everything preceding Descartes, all of synthetic projective geometry, non-euclidean geometry in the narrower classic sense, and a partial discussion of descriptive geometry; axonometry is not mentioned, and the treatment of perspective is very brief. Pohlke's theorem is not mentioned. The substance of this part is largely considered as a completed edifice.

The second part, algebraic geometry, covers 200 pages. It is the field of most of the author's own creative activity; many topics are referred to his extensive writings for fuller discussion. After pointing out various usages of coordinates in earlier writings, the classic period of Fermat and Descartes is given in some detail, followed by a discussion of abridged notation, change of space element and extension to higher dimensions. This in turn is followed by a short description of the Clebsch-Aronhold symbolic notation, minimal coordinates, of elliptic coordinates, pentaspherical coordinates, and other systems.

Unusual care is devoted to the study of enumerative geometry, particularly to the Schroeter calculus. The opinion is suggested that this subject has provided more errors in the literature of the subject of algebraic geometry than any other. After a stormy and acrimonious history, the principles of the discipline are now fully established, but in order to apply them properly, the operator must know how to count. The closely allied theory of correspondence between points of associated algebraic loci is discussed from the same point of view.

The chapter on birational geometry furnishes a good introduction to the geometry on algebraic curves and surfaces; rather more emphasis is put on the transcendental treatment than the history of the literature of the subject warrants. The treatment of the uses of higher spaces is well written, but too brief to be of maximum usefulness, except possibly the paragraph on quaternions. The chapter on trans-