A SET OF AXIOMS FOR LINE GEOMETRY *

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1. *Introduction.* In 1901 Pieri proposed a set of axioms for line geometry in terms of line and intersection.† That Pieri's set of eleven postulates was not independent was shown by Hedrick and Ingold in 1914; they proposed a simpler and more elegant set of but five independent axioms, using the same undefined concepts.‡ Both of these sets are for geometries equiva ent to the general three-space geometry established by axioms A_1, A_2, A_3, E_0, E_1, E_2, E_3 and E_3' of Veblen and Young.§

In this paper is given a set of six independent axioms in terms of line as an undefined element and an undefined class of one-to-one correspondences among the lines called collineations. There is introduced but one defined term before the complete statement of the axioms. To make a proper projective space it has usually been necessary not only to add a postulate of projectivity but also a sequence of definitions for such concepts as perspectivity, projectivity, etc., to give that postulate content. If to our set a seventh postulate is added, we have a proper projective three-space without the intervention of any additional defined concepts.‖

2. *Postulates.* Our basis is a class of undefined elements, called *lines*; an undefined class of one-to-one correspondences, or transformations, among the lines, called *collineations*; and

* Presented to the Society, Nov. 27, 1920.

† *Sui principi che regno la geometria delle rette*, TORINO ATTI, vol. 36 (1901), pp. 335–351.

‡ *A set of axioms for line geometry*, TRANSACTIONS OF THIS SOCIETY, vol. 15 (1914), pp. 205–214.

§ *A set of assumptions for projective geometry*, AMERICAN JOURNAL, vol. 30 (1908); *Projective Geometry*, vol. 1, Boston, 1910.

‖ Another set of postulates equivalent to the set of all seven of the axioms is the first seven given by the author in his paper *A set of postulates for general projective geometry*, TRANSACTIONS OF THIS SOCIETY, vol. 16 (1915), pp. 51–61.