53.

ON THE INVOLUTION OF AXES OF ROTATION.

[*Manchester British Association Report* (1861), p. 12.]

After a brief statement as to the most general mode of representing the displacement of a rigid body in space by means of angular rotations about six distinct axes fixed in position, it was shown that under peculiar conditions the six axes would become insufficient, being, in fact, equivalent to a smaller number, in which case they would be said to form a system in involution. Various constructions for representing such and similar systems were stated, and the remarkable conclusion presented, that the necessary and sufficient condition for three, four, five, or six lines being thus mutually, as it were, implicated and involved, consists in their lying in ruled surfaces of the first, second, third, and fourth orders respectively. The theory of involution originated with Prof. Möbius, by whom, however, it had been left in an imperfect condition. The author referred for further information on the subject to some recent notes by himself in the *Comptes Rendus** of the Academy of Sciences of Paris, and to certain masterly geometrical investigations of M. Chasles and Mr Cayley, to which these had given rise.

[* p. 236 above.]