FURTHER NON-INVOLUTORIAL CREMONA SPACE TRANSFORMATIONS CONTAINED IN A SPECIAL LINEAR COMPLEX*

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1. *Introduction.* In a series of papers by Snyder,† Carroll,‡,§ and the author, ||,¶ involutorial transformations were defined by means of a correspondence between the surfaces of a pencil and the points of a rational curve. The purpose of this paper is to apply similar methods to certain non-involutorial transformations.

2. *Definition of the Transformation.* Given a line d and two pencils of surfaces $|F_n|$ and $|F'_{n'}|$ of orders n and n' which contain d as an $(n-1)$-fold and $(n'-1)$-fold line, respectively. Make the surfaces of each pencil projective with the points of d. A point P will determine a unique surface F_n passing through it, hence a unique point O on d and a unique surface $F'_{n'}$. The line PO cuts $F'_{n'}$ in one point P' (other than O) which is defined as the image of P.

Since P and P' lie on a line which intersects d, any plane through d is transformed into itself. We shall find the plane transformation in an arbitrary plane through d and then generate the space transformation by revolving the plane about d.

3. *The Plane Transformation.* The intersections of an arbi-

* Presented to the Society, December 27, 1933.

† Virgil Snyder, *On a series of involutorial cremona transformations of space defined by a pencil of ruled surfaces*, Transactions of this Society, vol. 35 (1933), pp. 341–347.

‡ Evelyn Carroll, *Systems of involutorial birational transformations contained multiply in special linear line complexes*, American Journal of Mathematics, vol. 54 (1932), pp. 707–717.

§ Evelyn Carroll-Rusk, *Cremona involutions defined by a pencil of cubic surfaces*, American Journal of Mathematics, vol. 56 (1934), pp. 96–108.

|| Amos Black, *Types of involutorial space transformations associated with certain rational curves*, Transactions of this Society, vol. 34 (1932), pp. 795–810.

¶ Amos Black, *Types of involutorial space transformations associated with certain rational curves—composite basis curves*, this Bulletin, vol. 40 (1934), pp. 417–420.