SOME RECENT CONTRIBUTIONS TO ALGEBRAIC GEOMETRY*

BY VIRGIL SNYDER

1. *Introduction.* During the last decade mathematical literature has been enriched by over a thousand contributions to algebraic geometry, including about eight hundred to the narrower field of rational transformations. It would be an ambitious task to report on this immense field in one short talk. Today I wish to speak of only three problems, each one somewhat well defined, or even narrow. Of these, one furnishes a striking example of mathematical elegance in providing one solution to what was regarded as several distinct problems. The other two are capable of unlimited extension, each new enlarged field furnishing phases not existing in the earlier ones.

2. *Series of Composition of Veneroni Transformations.* The Cremona transformations determined by a system of bilinear equations between the systems of coordinates of the two associated spaces were among the first to be considered in S_2 and S_3. For the general case the configuration of fundamental and principal elements can be at once expressed in terms of the vanishing of certain determinants of a matrix. (Segre.†) This has recently been generalized to spaces of higher dimensions by various authors, in particular to S_n by Godeaux.‡ Numerous particular cases have been considered. If $x_i x_i' = x_k x_k'$, the extreme case of inversion results. Transformations made up of this inversion and of collineations have no fundamental curves of the first kind; they have a series of composition somewhat similar to that of the general case for S_2.

If in every bilinear equation the coefficients a_{ik} and a_{ki} are equal, the transformation is involutorial and can be expressed in terms of polarity as to a series of quadrics or as to null systems. In case all the polarities are quadric and the quadric primals are independent, there are only a finite number of invariant

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† C. Segre, Rendiconti dei Lincei, (2), vol. 9 (1900), pp. 253–260.

‡ L. Godeaux, Lombardo Istituto Rendiconti, (2), vol. 43 (1910), pp. 116–119.