

integrals and the theory of the Riemann matrix, reducible Abelian integrals of the first kind, singular correspondences, Hermitian correspondences, involutions on algebraic curves, Schubert's formula and arithmetic criteria of Castelnuovo and of Severi, the Jacobian manifold  $V_p$  of a curve of genus  $p$ , and automorphic birational transformations of an irreducible curve are considered in the latter part of the chapter.

IV. *Birationale (oder Cremona-) Transformationen zwischen zwei linearen Räumen von zwei oder mehreren Dimensionen.* The study of transformations is started with a discussion of the plane Cremona transformation and the nature and properties of the fundamental elements. The Cremona group, periodic and involutorial transformations, the types of plane involutions, and the quadratic transformation are taken up in turn. The transformations of ordinary three-space are then considered with emphasis on the quadratic, the bilinear cubic, and the monoidal transformations. The chapter closes with sections devoted to transformations of higher space and to regular groups of Cremona transformations.

V. *Mehrdeutige Korrespondenzen zwischen zwei linearen Räumen von zwei oder mehreren Dimensionen.* This chapter goes into the theory of rational transformations between two planes and between three-spaces. Algebraic correspondences with arbitrary indices between two planes and between two three-spaces are also considered together with higher null transformations and general involutions in spaces of two or more dimensions.

VI. *Anwendungen.* In this short chapter on applications the author writes on mapping, reduction of singularities of curves and surfaces, and the reduction of linear systems of algebraic curves and surfaces to types by means of Cremona transformations.

VII. *Ebene Abbildung von rationalen Flächen.* This short chapter is devoted to the questions of rationality of a surface, real rational surfaces, the work of Comessatti, and mapping on multiple planes.

VIII. *Andere besondere Abbildungen und algebraische Korrespondenzen.* In the last chapter of the book rational manifolds of three dimensions and connexes are considered.

L. A. DYE

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The use of an index is not uniform throughout the work. Thus *Analysis*, Teil I, has neither subject index nor list of names mentioned. All the other parts have a subject index and *Analysis*, Teil 3, has a list of names. At the end of the second volume on geometry appears a 45-page index of subject matter, pertaining to Teil 2 only, and this is followed by a 70-page list of names cited in all of the 5000 pages on geometry. It was a monumental task and may have some use, but if so, in ways other than serving as a finder when applied to a name often cited. The name most frequently appearing in this list is Felix Klein, with over 500 citations; Arthur Cayley is a close second.

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