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(*b*. Palermo, Italy, 21 October 1855; *d*. Palermo, 29 October 1914)

mathematics.

The son of Giuseppe Maria Guccia and Chiara Guccia-Cipponeri, Guccia belonged, through his father, to the noble Sicilian family of the marquis of Ganzaria. As a young man he was an ardent sportsman and was particularly interested in horsemanship. He studied first at Palermo, then at the University of Rome, where he was one of Luigi Cremona's best students. In 1880 he defended a thesis dealing with a class of surfaces representable, point by point, on a plane. Shortly before, he had presented a communication on certain rational surfaces dealt with in this work to the congress of the French Association for the Advancement of Science at Rheims and had been publicly congratulated by J. J. Sylvester. After returning to Palermo, Guccia pondered some grand schemes of theoretical research. In 1889 he was appointed to the newly created chair of higher geometry at the University of Palermo, a post he held for the rest of his life.

The path that Guccia followed throughout his career was that of the great Italian geometers of the nineteenth century. For them the synthetic method, aided by intuition, was the ideal instrument of discovery, more efficacious than the calculus, of which the artifices often conceal the logical structures and the relationships among the elements of a figure. To be sure, the role of algebra is not negligible, but it should be limited to what is linear, for the establishment of certain principles, and then give way to the intuitive method. Guccia's works concern primarily Cremona's plane transformations, the classification of linear systems of plane curves, the singularities of curves and of algebraic surfaces, and certain geometric loci which permit the projective properties of curves and surfaces to be deduced.

In studying the classification of linear systems of types 0 and 1, Guccia was inspired by the method used by Max Nöther to demonstrate that every Cremona transformation is the product of a finite number of quadratic transformations. Guccia's results were completed in 1888 by Corrado Segre, and the question was taken up in 1897 by Guido Castelnuovo in his memoir on linear systems of curves traced on an algebraic surface. In studying the singular points and singular curves of a surface, Guccia discovered theorems analogous to those for linear systems of curves. Although the majority of Guccia's publications are very short, they all contain original ideas and new relations profitably used by other geometers. This is particularly true of his researches on projective involutions, which laid the foundation for the generalizations of Federico Enriques and Francesco Severi. Occasionally, Guccia himself generalized from partial results, as in the case of the projective characteristics of plane algebraic curves and of their linear systems (where he introduced a projective definition of polars), which he extended to surfaces and to gauche curves.

In a period when knowledge of the geometry of algebraic surfaces was extremely limited, Guccia made a useful contribution. It was immediately exploited and absorbed by other mathematicians who, more attracted than he by analytical procedures, achieved greater fame. Compared with the work of his teacher Cremona, Guccia's is on a lower plane, if not in subtlety at least in extent and significance. Yet Guccia's chief merit lies elsewhere: his name remains associated with the foundation of the Circolo Matematico di Palermo.

In 1884, five years before his appointment to the university, Guccia had the idea of establishing a mathematical society in Palermo, for which he would furnish the meeting place, a library, and all necessary funds. His generous offer was favorably received, and on 2 March 1884 the society's provisional statutes were signed by twenty-seven members. The goal was to stimulate the study of higher mathematics by means of original communications presented by the members of the society on the different branches of analysis and geometry, as well as on rational mechanics, mathematical physics, geodesy, and astronomy. The group's activity was soon known abroad through the *Rendiconti del Circolo matematico di Palermo*, the first volume of which consisted of four sections appearing in July 1885, September 1886, December 1886, and September 1887. On 7 November 1887 Joseph Bertrand presented this volume to the Académie des Sciences of Paris, emphasizing its high scientific standard. On 26 February 1888 new statutes for the society authorized the election of foreign corresponding members, and the *Rendiconti* thereby became an international review. Guccia, who had placed his personal fortune at the disposal of the Circolo, established a mathematical publishing house in Palermo in 1893. To the *Rendiconti* he added *Supplemento ai Rendiconti del Circolo matematico di Palermo, Indici delle pubblicazioni del Circolo matematico di Palermo*, and *Annuario biografico del Circolo matematico di Palermo*. He also took personal charge of the editing of all these publications.

BIBLIOGRAPHY

I. Original Works. The list of mathematical works drawn up by de Franchis (see below) contains forty-four titles. Lectures given at the University of Palermo in 1889–1890 appeared as *Teoria generale delle curve e delle superficie algebriche* (Palermo, 1890). His longer arts. include "Teoremi sulle trasformazion Cremoniane nel piano. Estensione di alcuni teoremi di Hirst sulle trasformazioni quadratiche," in *Rendiconti del Circolo matematico di Palermo*, **1** (1884–1887), 27, 56–57, 66, 119–132; "Generalizzazione di un teorema di Noether," *ibid*., 139–156; "Sulla riduzione dei sistemi lineari di curve ellittiche e sopra un teorema generale delle curve algebriche di genere *p*," *ibid*., 169–189; "Sui sistemi lineari di superficie algebriche dotati di singolarità base qualunque," *ibid*., 338–349; "Sulle singolarità composte delle curve algebriche piane," *ibid*., **3** (1889), 241–259; "Ricerche sui sistemi lineari di curve algebriche piane, dotati di singolarità ordinarie," *ibid*., **7** (1893), 193–255, and 9 (1895), 1–64; and "Un théoreme sur les courbes algébriques planes d'ordre *n*." in *Comptes rendus hebdomadaires des séances de l''Acaadémiedes sciences*, **142** (1906), 1256–1259.

II. Secondary Literature. See Michele de Franchis, "XXX anniversario della fondazione del Circolo matematico di Palermo...," in *Supplemento ai Rendiconti del Circolo matematico di Palermo*, **9** (1914), 1–68; and "G. B. Guccia, cenni biografici..." in *Rendiconti del Circolo matematico di Palermo*, **39** (1915), 1–14.

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