WILCZYNSKI'S AND FUBINI'S CANONICAL SYSTEMS OF DIFFERENTIAL EQUATIONS*

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1. *Introduction.* The projective differential geometry of surfaces has been studied extensively in the United States by Wilczynski, Green, and others, using the invariants and covariants of a completely integrable system of linear homogeneous partial differential equations. In Italy, much progress in projective differential geometry has been made by Fubini, Bompiani, and others, who have approached the subject from the point of view of differential forms and the absolute calculus. The *normal coordinates* of Fubini have been shown by him to be solutions of a canonical system of differential equations. It is the purpose of this note to show how Fubini's canonical differential equations may be obtained by Wilczynski's method, and to compare Wilczynski's and Fubini's canonical forms for the differential equations of a surface.

It is evidently desirable that geometers living on different sides of the Atlantic, writing in different languages, and using different analytic apparatus, but interested in the same subject, should be able to exchange ideas freely. It is hoped that this note will to some extent smooth the way for this commerce of ideas by showing how certain equations and formulas obtained in one notation may be written also in the other.

2. *Analytic Foundation.* Let the homogeneous coordinates $y^{(1)}, \cdots, y^{(4)}$ of a general point P_y on a non-degenerate non-developable surface S_y be given as analytic functions of two independent variables u, v. If S_y is referred to its asymptotic

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