

ON SYMMETRIC FUNCTIONS AND SYMMETRIC FUNCTIONS OF SYMMETRIC FUNCTIONS*

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INTRODUCTION

The study of symmetric functions is quite an old one. From the time of Girard (1629) even up to the present day this subject has occupied the attention of many eminent mathematicians. The theory of the roots of algebraic equations in one or more variables has furnished the chief incentive for the development of the theory of symmetric functions. Ingenious methods for computing symmetric functions in terms of what are called *the elementary symmetric functions* have been developed by Hammond, Brioschi, Junker, Dresden and others. Extensive tables of symmetric functions in terms of the elementary symmetric functions may be found in the literature.

Symmetric functions play such a pre-eminent rôle in the mathematical theory of statistics and their computation by direct methods or by general formulas, even when assumptions restricting the groupings of the variates about the various means are made, is so excessively tedious that there has seemed to be need

*A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the University of Michigan.