

systems of equalities between the roots of a quartic or a quintic equation, viz. for each system conditions which are satisfied for the particular system, and are not satisfied for any other systems, except, of course, the more special systems included in the particular system. The question of finding the conditions for any particular system of equalities is essentially an indeterminate one, for given any set of functions which vanish, a function syzygetically connected with these will also vanish; the discussion of the nature of the syzygetic relations between the different functions which vanish for any particular system of equalities, and of the order of the system composed of the several conditions for the particular system of equalities, does not enter into the plan of the present memoir. I have referred here to the indeterminateness of the question for the sake of the remark that I have availed myself thereof, to express by means of invariants or covariants the different systems of conditions obtained in the sequel of the memoir; the expressions of the different invariants and covariants referred to are given in my "Second Memoir upon Quantics," *Phil. Trans.* vol. cxlvi. (1856).

VII. "Tables of the Sturmian Functions for Equations of the Second, Third, Fourth and Fifth Degrees." By ARTHUR CAYLEY, Esq., F.R.S. Received December 18, 1856.

(Abstract.)

The general expressions for the Sturmian functions in the form of determinants, are at once deducible from the researches of Professor Sylvester in his early papers on the subject in the 'Philosophical Magazine,' and in giving these expressions in the memoir "Nouvelles Recherches sur les Fonctions de M. Sturm," *Liouville*, t. xiii. p. 269 (1848), I was wrong in claiming for them any novelty. The expressions in the last-mentioned memoir admit of a modification by which their form is rendered somewhat more elegant; I propose, on the present occasion, merely to give this modified form of the general expression, and to give the developed expressions of the functions in question for equations of the degrees, two, three, four and five.

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